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Original Articles

A REVIEW OF RECENT WORK ON THE MECHANISM OF URINE FORMATION.*

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PREFACE.

The study of the mechanism of urine formation is still one of the most fascinating fields of physiologic research, as is witnessed by the output of papers. Aside from its direct practical application, the kidney owes its chief interest to the fact that, of all the glands, its functions seem best adapted to a simple physicochemical explanation; which, being once found, might furnish a key to the more complicated so-called vital phenomena. On the other hand, its anatomic structure is peculiarly complex and makes a complete isolation of its functions a problem which continues to elude the utmost ingenuity of skilful investigators.

Recourse must be had, therefore, to indirect methods, to deductions and theories, which in turn rest on assumptions more or less definitely proved, or more or less probable. Such methods are peculiarly exposed to the danger of "reasoning around a circle." The temptation is ever present to consider a more or less arbitrary assumption as an established fact; to accept that a theory is proved by results which are merely in agreement with it—without inquiring whether these results do not also agree with another theory.

To avoid the dangers of these temptations, it is necessary, at every step, to examine into the real experimental basis for every assumption, and to inquire whether the suggested explanation is indeed the only one which is possible. This separates at once those facts and theories which are definitely "proved," from those which are merely "indicated" as more or less "probable." The neglect of this rigorous criticism can only result in unprofitable speculation. Indeed, experience has shown that, in this subject at least, mere "probability" is a very unsafe guide, and that it is unprofitable to make degrees of the probable, the "six of one and seven of the other" style of argument.

It has seemed to me a not unpromising task to attempt the application of this rigid criterion of definite proof to the present status of our knowledge as reflected in the investigation of the last two years; going back to previous work when this was indispensable for a clear presentation of the subject. The limits of this paper permit only a summary consideration of the principal investigations which bear directly on the main problem—the theory of urine formation. Those desiring a more detailed description are referred to the several excellent compilations which have recently appeared[1].

INTRODUCTION.

By way of introduction it may be said that these investigations emphasize that we are very far indeed from a clear conception of the kidney mechanism. Most of the recent workers consider any simple physical explanation as entirely inadequate, and tend to lay increasing stress on the vital secretory factor. On the other hand, the mechanical filtration and absorption theory of Ludwig is no longer opposed so sharply to the secretion theory of Heidenhain. The discussion has shifted to the more profitable field of inquiring in how far the physical theories explain the facts, and what is left as an unexplained "vital" residuum. In regard to this, opinions vary, and nearly every investigator has his own theory; but it is a sign of healthy progress that the investigations turn about this, as the real problem, rather than about two special theories.

The differences of opinions and theories show that we are not yet in possession of sufficient facts to justify any opinion or theory. In other words, the way of progress lies in emancipation from the bondage which the theories have imposed; and in the search for facts, more facts, and especially more definite facts. When these have been collected and assimilated, it may appear that we should not speak of the mechanism of urine formation, in the singular, but of the mechanisms, in the plural. In other words, the indications are that several mechanisms are involved, one or the other predominating according to conditions; so that an explanation which fits one case, may not fit another.

THE EXCRETION OF PIGMENTS.

One method which has been utilized in the attempt to define the function of the different cells of the kidney, consists in the introduction of substances which would be visible to these cells. Heidenhain[2] and more recently Gurwitch,[3] Höber and Königsberg[4] and Basler[5] injected pigments for this purpose. On examining

* Read in the Section on Pathology and Physiology of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907. A portion of the article is omitted because of lack of space. The complete article appears in the Transactions of the Section and in the author's reprints.

* From the Pharmacologic Laboratory of the Medical Department of the Western Reserve University.

1. Asher (L): Die Lehre von der Harnabsonderung. Biophysikalisches Centralblatt, 1906, ii, pp. 1, 33, 65; bibliography, p. 165.
Beddard (A. P.): The secretion of urine; in Hill's Recent Advances in Physiology and Biochemistry, 1905.
Magnus (R.): Die Tätigkeit der Niere. Münch. med. Wochschr., 1906, 28 and 29.
Metzner (R): Die Absonderung und Herausbeförderung des Harnes; in Nagel's Handb. d. Physiol. d. Menschen, vol. ii, part 1, p. 207.

2. Heidenhain: Hermann's Handbuch der Physiology, 1883, v, part 1, p. 309.

3. Gurwitch: Pflüger's Archiv f. d. ges. Physiol., 1902, xci, 71.

4. Höber and Königsberg: Pflüger's Archiv. f. d. ges. Physiol., 1905, cviii, p. 323.

5. Basler: Pflüger's Archiv. f. d. ges. Physiol., 1906, cxii, p. 203.

the kidneys histologically, these pigments are seen as granules in the lumen and within the cells of the convoluted tubules (with a few pigments, also in Bowman's capsule). Evidently then, these cells have the function of either secreting or of absorbing, pigment. Heidenhain tried to show, by a series of experiments, that these granules are in the way of being secreted; but the adherents of Ludwig's theory contend that the results could also be interpreted as showing that they are being reabsorbed. In the frog, however, this question has been definitely decided by Gurwitch in favor of secretion; for no pigment appears in the urine when the blood is prevented from going to the tubules, while its access to the glomeruli is unimpeded—an experiment which can be performed on the frog by tying the renal-portal vein. Since the distribution of the pigment is quite similar in mammals, it seems natural to assume that it has the same explanation. There is, however, some danger in transferring results obtained on frogs directly to mammals; for it is quite conceivable that the epithelial cells in the lower animals are less specialized and more phagocytic.

This series of experiments, then, only proves definitely, that the epithelium of the convoluted tubules, in frogs, is capable of secreting certain abnormal substances; and suggests that the same applies to mammals. This is not a serious blow to the filtration-reabsorption theory, for it is granted by everyone that this epithelium has some secreting function, even in mammals, at least under abnormal conditions. For instance, the excretion of sugar after phlorrhizin is attributed to them by practically everyone.

MORPHOLOGIC CHANGES IN THE KIDNEY CELLS CONNECTED WITH DIURESIS.

The morphologic characters of most gland-cells change during secretion. Such changes would therefore be an important proof of secretory function; but nothing of the kind has ever been proved in the kidney. These negative results do not suffice to discredit the secretion theory, for it is quite possible that the peculiar appearances in other gland cells are connected with the formation of new substances, rather than with the elimination of substances existing ready-formed in the blood, which is the special function of the kidneys.

THE SEPARATION OF THE TUBULAR AND GLOMERULAR FUNCTION IN THE FROG.

The separate blood supply of the glomeruli and tubules in the frog was first utilized for the experimental separation of the functions of these two mechanisms by Nussbaum[11], who ligated the renal artery to exclude the glomeruli from the circulation. His results were confirmed by Mosberg, Marcuse and Halsey, but his interpretation was put in doubt when Adami[12] showed that the operation, as performed by these investigators does not necessarily cut off the circulation from all the glomeruli. Beddard[13] proved that this can be accomplished with proper care; but in his first series of experiments, the successful operation led to cessation of the urine flow.

His second series, with Bainbridge,[14] showed that the functions of the tubules can be maintained by keeping the animals in an atmosphere of oxygen. Observations on these animals (in which the glomeruli are excluded) demonstrate that the tubules are capable under the stimulus of urea injection of secreting water, chlorid, sulphate, urea; and sugar in hyperglycemia; that they form sugar when poisoned by phlorrhizin; and that the urine is of acid reaction. In short, they prove that the tubular epithelium is capable of secreting each of the urinary constituents in frogs; and there is no good reason to assume that the mammalian epithelium behaves differently, although this is not directly proved. One of the important points in the urine controversy may therefore be considered as definitely settled. However, the experiments leave unsolved the equally important question of tubular reabsorption, of the glomerular functions, and of the relative importance of these processes.

These matters are taken up in the experiments of Cullis[15], who, instead of ligating the vessels, excised the heart and separately perfused the vessels of either the glomeruli (through the aorta), or of the tubules (through the abdominal vein), or of both. The perfusions were made with a diluted oxygenated Locke's fluid, isotonic with 0.6 per cent. NaCl.

The results show that, in the artificially perfused frog's kidney, the glomeruli ordinarily secrete all the water and probably all the dissolved substance. They are the mechanism on which the saline diuretics act, exclusively in the case of sulphates, chlorids, nitrates and acid phosphates; and mainly in the case of dextrose and urea. The tubular epithelium does not ordinarily eliminate water and it is doubtful whether it eliminates salts; it is not stimulated by saline diuretics, except to a limited extent by dextrose and urea; but it is activated by caffein and phlorrhizin (whether these also act on the glomeruli is not decided). When thus stimulated, the tubules eliminate water, chlorids, sulphates and dextrose. Phlorrhizin also causes the production of dextrose.

Could such conclusions be drawn from experiments on living, mammalian kidneys, working under normal conditions, their importance could not be exaggerated; for they would show that the elimination of all the urine constituents could be carried on vicariously by either the glomeruli or the tubules; but that ordinarily the glomeruli played the preponderant rôle.

Unfortunately, however, several objections can be made to these experiments. In the first place, the results obtained on the frog need not apply to mammals; and more seriously, from what we know of the extreme dependence of the kidneys on an arterial blood supply, it would seem that kidneys artificially perfused with a saline mixture are not proper objects for investigating the vital function of the kidney. The response to caffein and phlorrhizin is presumably vital; but it is known that different functions of the kidney disappear at different times after death.

In the mammalian kidney, for instance, the ability to secrete what may properly be called a urine is gone almost immediately after the death of the animal; the reaction of suprarenal injections lasts for some hours; the consumption of oxygen and the dilator reaction to blood or hydrocyanic acid disappears only after some days[16].

11. Nussbaum: Pflüger's Archiv, 1878, xvi, p. 139, and xvii, p. 580.
12. Adami: Jour. of Physiol., vi, p. 382.
13. Beddard: Jour. of Physiol., 1902, xxviii, p. 20.
14. Bainbridge and Beddard: Biochemical Jour., 1906, i, p. 255.
15. Jour. of Physiol., 1906, xxxiv, p. 250.
16. Sollmann (T.): Amer. Jour. of Physiol., 1905, xiii, p. 243.

It is quite conceivable that a greater or lesser part of the phenomena studied by Cullis are phenomena of postmortem filtration; and as long as this doubt exists, the conclusions are insecure. Even were they granted, however, they would throw light only on the relative functions of the tubules and glomeruli, and very little on the mechanisms through which these functions are carried out: Whether entirely by secretion or partly by filtration and reabsorption.

MECHANICAL OBJECTION TO THE FILTRATION THEORY.

Until recently it has been universally believed that the structure of the glomeruli is that of an ideal filter, and consequently that filtration is bound to occur there unless it be opposed by special forces, such as osmosis, etc. Hill[17] and Filehne and Biberfeld,[18] however, now contend that glomeruli filtration, in the living or dead kidney, is *a priori* impossible. This contention is mainly theoretical and is based largely on the assumption that, the cellular protoplasm being practically a colloidal solution, it must transmit pressure equally in all directions. The fluid in the capsule of Bowman would, therefore, be under the same pressure as that in the glomerular capillaries, so that there would be no filtration pressure. Furthermore, Filehne and Biberfeld claim that, even if a pressure existed, filtration would not occur; at least they could not with ordinary pressure obtain filtration through egg-membrane or gelatin membranes, to which the capillary membrane might be compared. Finally, they failed to observe any filtration of carmin in dead kidneys.

To all these arguments of Hill and Filehne and Biberfeld, there is opposed the simple fact that filtration does occur very freely, in excised kidneys, as will be shown in the next section. It is therefore only necessary to seek for the cause of the fallacies in the above argument. The first assumption, that there can be no filtration pressure, probably errs in underestimating the importance of the relative rigidity of the vascular wall, of the basement membrane, and of other connective tissue structures, and possibly of the cell-walls—all of which interpose obstacles to the free transmission of pressures across them. The negative results with homogeneous membranes and carmin injections simply show that the conditions of glomerular filtration were not really reproduced. It is not difficult to advance several possible explanations for this failure, but it would be unprofitable to discuss these until they have been subjected to experiment.

FILTRATION PHENOMENA IN EXCISED KIDNEYS.

When a process involves many complex factors, in part of unknown nature—and this is the case with urine-formation—it may be of advantage to confine the investigation to the simplest factors. With this idea, I have carried out an extensive series of investigations (with the collaboration of Hatcher[19]) on the perfusion of excised kidneys. By using these several days after death, or by killing them, for instance, with strong salt solution, the "vital" factors could be completely eliminated, leaving only the purely mechanical phenomena. The injection of saline solutions into the renal artery produces an outflow of fluid from the vein, and in fresh kidneys also from the ureter. This ureter flow is not due to rupture of the vessels, for it does not contain corpuscles when blood is added to the perfusing fluid. Nor does it involve any vital force, for it is even much more copious when solutions of such strengths are used as would seriously impede any vital action. There are other, equally potent, reasons which prove that this ureter fluid is formed purely by filtration.

The results of these experiments show that filtration does not account at all for the composition of the urine, since the composition of the ureter-fluids corresponded quantitatively (as far as investigated) with that of the perfusing fluids. The effects on the circulation through the kidney, and on the quantity of urine, on the other hand, correspond very closely with those produced by analagous changes in the living animal.

While these experiments show that many phenomena in the formation of urine agree perfectly with the simple mechanical conception of filtration, it must be remembered that one of the most important factors—the composition of the urine—is entirely unexplained by them. Even where the correspondence is complete this does not exclude the cooperation of a vital factor. Strictly speaking, the results prove only that a series of phenomena occur in the kidney as if this were a simple filter and that any vital actions which may participate in these phenomena, either act in the same direction as filtration, or else are of subordinate importance. On the other hand, however, it must be remembered that a vitalistic interpretation is not justified until the mechanical interpretation has been shown to be inadequate.

THE OSMOTIC WORK PERFORMED BY THE KIDNEY.

It has been stated above that filtration can not account for the composition of the urine; moreover, a consideration of the composition of the urine teaches that there are forces at work in the kidney opposed to filtration and many times greater than the available filtration pressure. In the transformation of plasma into urine, the molecular concentration is generally altered. This corresponds to a change in the osmotic pressure, and this implies work. The forces required for this are very commonly a hundred or more times greater than the blood pressure available for filtration. This makes it necessary to assume that the changes in concentration take place after the urine has been filtered, i. e., in the tubules and not in the glomeruli.

This is important, for as we now understand the laws of osmosis, it follows that the glomerular fluid, if it is a filtrate, must have very nearly the same total molecular concentration as the blood-plasma. As soon as we grant that the glomerular fluid is more dilute or more concentrated than the plasma we renounce the filtration theory, at least for these conditions. There is no conclusive evidence, positive or negative, however, as to the concentration of the glomerular fluid.

The work of L. Kahlenberg,[23] which has come to my notice since writing the above, indicates that the theory on which these calculations of osmotic pressure are based, is erroneous. If he is correct—and his experiments and deductions are very convincing—all the arguments based on osmotic concentration of the urine must be reconsidered and revised, and meanwhile can not be utilized either for or against the filtration theory.

THE OXYGEN CONSUMPTION OF THE KIDNEY.

A most interesting confirmation of the large amount of work performed by the kidney, is furnished by the work of Barcroft and Brodie,[24] who investigated the

17. Hill: Biochem. Jour., 1906, i, p. 55.
18. Filehne and Biberfeld: Pflüger's Archiv., 1906, cxi, p. 1.

23. Kahlenberg (L.): Jour. of Physical Chemistry, 1906, x, 141.
24. Barcroft and Brodie: Jour. of Physiol., 1904, xxxii, p. 18 1905, xxxiii, p. 52.

oxygen consumption of this organ. In proportion to the weight, this is about as large as the average for the other organs of the body, when the urine is scanty; but in urea, sulphate or phlorrhizin diuresis it rises to a mean of five times the average of the body.

ATTEMPTS TO ISOLATE THE FUNCTIONS OF THE GLOMERULI AND TUBULES IN MAMMALS.

The striking differences in the anatomic structure of these two portions of the kidney would suffice to justify the conclusion that they work through different mechanisms, even were there no other proofs of this fact. It is, therefore, essential to an explanation of urine-formation, that the physiologic differences connected with these structural differences be known. In the frog, as we have seen, the separate blood-supply of these two sets of structures offers the possibility of isolating their functions directly. In mammals, however, the same blood passes successively through both, so that the question can not be approached in this simple manner.

Two methods of investigation have been principally followed: The one consists in the attempt to destroy one set of structures, whilst the other is left intact. The second, in altering conditions which are assumed to affect the functions of the one and not of the other. Both of these methods admit of almost infinite variations, and have been extensively practiced. They have led to the discovery of a great many empirical results and of some empirical laws; but to the problem of the special function of the glomeruli and troubles, they have contributed very little that may be considered as definitely settled or conclusive. The reasons for this failure are not far to seek, as we shall see.

METHODS INVOLVING INJURY TO ONE OF THE STRUCTURES.

No method has yet been devised, by which one set of structures can be wholly destroyed, while the other is left wholly intact; and a merely partial destruction of the one set, or a greater destruction of the one than of the other, does not lead to clear results—partly because of the compensatory action of the remaining portions, and partly because the kidney reacts to certain injuries in a specific and very violent manner.

This is illustrated by the polyuria following the partial excision of the kidneys in the experiments of Bradford[25]. Complex pathologic processes are thereby substituted, to an incalculable degree, for the simple physiologic modification at which it is aimed. Since we know nothing about the nature of these processes, and very little about the conditions under which they occur, they necessitate a most careful criticism of every destruction-method.

EXPERIMENTAL NEPHRITIS.

This can readily be produced by the use of certain drugs,[31] and may be confined at will to either the glomeruli or the tubules, at least in so far as the histologic appearance shows. The nephritis leads to certain changes in the urine; and the animals thus treated may be subjected to a variety of procedures, and the results compared with those obtained on normal animals. A very attractive field for research is thus thrown open. It must be remembered, however, that nephritis presumably *alters* the functions of cells more commonly than it *destroys* them. This introduces unknown factors, which render conclusions as to the *normal* functions insecure, or at best conditional on certain assumptions. Nevertheless, many researches have been made along this line, and they have yielded results of at least empirical value. But, for the reasons stated, they do not throw any clear light on the kidney mechanism.

EVIDENCES DRAWN FROM THE EFFECTS OF VARIOUS CONDITIONS ON THE URINE.

It will be remembered that the second method of separating the functions of the glomeruli and tubules, consists in subjecting the kidney to conditions which are assumed to affect exclusively, or at least more specifically, one of these structures. The objection to the principles of this general method consists in the necessity for making assumptions, which are often not binding and which are sometimes the very point to be proved.

THE INFLUENCE OF THE CIRCULATION ON THE URINE.

As we have seen, the flow of urine is influenced by changes in circulation, exactly as if it were formed of pure filtration, a fact which has always been the mainanchor of hope for the adherents of the filtration theory, and which has been abundantly supported by my perfusion experiments. It has been objected by those who prefer the secretion theory, that the activity of other glands is also generally accompanied by increased circulation. Macallum,[33] however, has pointed out that this is not an indispensable factor in strictly secretory action; indeed, outside of the kidney the increased circulation generally can be shown to be the effect rather than the cause of the secretion. At all events, the dependence is nowhere as intimate as it can be shown to be in this organ, when the experiments are properly conducted.

The above, of course, refers only to the quantity of the urine, and not to its composition. As to this, we have seen that it can not be explained on a mechanical basis. It may be presumed that it is influenced at least indirectly, by the circulation, but definite data are scanty.

THE EFFECTS ON INCREASED URETER PRESSURE.

The rate of excretion of different salts under different degrees of diuresis inclined Cushny[37] to the opinion that the formation of urine is essentially a filtration and reabsorption process. According to him, the glomerular fluid is a filtrate of the same composition as the plasma (minus the proteid); this fluid, in passing down the tubules, undergoes partial reabsorption. The differences in the individual constituents are referred to differences in their absorbability.

Water and chlorids are absorbed relatively readily, sulphates, urea and phosphates much less readily. When the secretion of the urine is slow, there is more opportunity for reabsorption; and consequently all the constituents of the urine would be lessened in amount; but this diminution would affect principally the more absorable constituents, the water and chlorids; while the sulphates, phosphates and urea would scarcely be altered. Rapid diuresis would have the opposite effects.

25. Bradford (Rose): Jour. of Physiol., 1898, xxiii, p. 415.
31. A summary of the work on experimental nephritis is given by Sollmann, in THE JOURNAL A. M. A., Nov. 26, 1904.
33. Macallum (J. B.): Jour. of Biol. Chem., 1906, i, p. 335.
37. Cushny: Jour. of Physiol., 1902, xxvii, p. 429.

In brief, Cushny's results were in substantial agreement with his assumptions, although they did not prove these assumptions, since other explanations could not be excluded. Brodie and Cullis,[38] however, obtained the very opposite results in some very similar experiments. They found that moderate resistance in the ureter caused an increase of urine and sulphates, instead of the diminution demanded by Cushny's theory, which they, therefore, consider disproved. This again seems to be an extreme assumption. It does not appear absolutely certain from their paper that they really eliminated ureter-peristalsis (see above), so that they may in fact have dealt with a lessened resistance in the ureter, instead of an increased resistance, as they supposed in drawing their conclusions. But granting that their interpretation is correct, the very differences in the results prove that they were working under conditions somehow essentially different from those of Cushny. In other words, while the filtration and reabsorption theory could not explain the results obtained under their conditions, it might still explain Cushny's results, obtained under his conditions. This would only necessitate the assumption that the kidney disposes over a number of mechanisms—an assumption which is not inherently improbable.

THE REGULATION OF THE URINE.

Everybody is agreed that the main purpose of the kidneys consists in the removal of such material as would otherwise accumulate in excessive amount in the body—in other words, the kidneys exist for the purpose of maintaining the composition of the body approximately constant. It is evident that they perform this regulating function adequately under all ordinary conditions, by a suitable adaptation of the quantity and composition of the urine; but the mechanism through which they respond to the ever-v rying task which is imposed on them, is by no means clear and involves some very interesting problems.

How does the body at large inform the kidneys of its needs? How do they modify their functions to comply with the demands? Since no secretory nerves can be demonstrated in the kidneys, the regulation is presumably chemical, and one would naturally refer it to the blood, which establishes a direct relation between the tissues and the kidneys. In other words, one would assume that the composition of the urine is regulated directly by that of the blood. This would be a simple explanation and it seems supported by the fact that the composition of the blood is much more constant than that of the tissues, so that the regulation of the blood appears to be the more important function.

On the other hand, however, this constancy introduces a complication: for it means that very large changes in the urine correspond to very small changes in the blood; indeed, the composition of the blood, by our methods of analysis, appears to be constant, when that of the urine and that of the tissues is profoundly altered. There is also abundant evidence (Magnus[39], Sollmann[40]) that the regulation of the blood is accomplished much more effectively by the tissues than by the urine. These facts suggest that it is the tissues, rather than the blood, which really influence the urine. These considerations give us a choice between several *a priori* assumptions:

38. Brodie and Cullis: Jour. of Physiol., 1906, xxxiv, p. 224.
39. Magnus: Arch. f. exu. Path. u. Pharm., 1900, xliv, p. 68.
40. Arch. f. exp. Path. u. Pharm., 1901, xlvi, p. 1.

FORSTER'S THEORY OF CHLORID RETENTION.

As is well known, the withholding of salt causes a diminution in the chlorid percentage of the urine, to a very small amount; while at the same time the percentage in the serum is practically unchanged. The urinary chlorids can be reduced by a number of other measures, and I have shown[41] that these are all such as would theoretically tend to lower the percentage of chlorids in the blood—but actual analysis fails to show this diminution.

As long ago as 1873 Forster[42] advanced a physico-chemical theory for this phenomenon, in salt-hunger. He suggested that chlorids exist in the blood in two forms: firstly, free, as they are in watery solutions; and secondly, combined in some way with the colloids of the plasma. Assuming the free chlorids to be filtrable, and the combined chlorids as non-filtrable, the chlorid retention would be easily explained, as follows: In salt-hunger, for instance, the free chlorids would soon be eliminated, and the excretion would therefore stop; analysis would show an abundance of chlorids in the serum, but these would be in the non-filtrable combined form. All the other measures which lower the chlorid content of the urine would similarly reduce the percentage of free chlorids in the blood, while they would leave the combined chlorids unaffected. I have found[41] that certain salts, such as nitrates, iodids, or sulphocyanids, can raise the chlorid percentage in these conditions. All these salts are very similar to chlorids, and it seems quite natural that they could displace a part of the combined chlorid from its combinations and thus convert it into the filtrable form. The fact that urine is free from sugar, but that this substance appears at once in hyperglycemia, could similarly be explained on the assumption that the ordinary quantity of blood-sugar is bound and non-filtrable, but that any additional quantity is free, and therefore filtrable.

The agreement of these modern facts with Forster's theory is practically perfect, but the agreement is only empirical, and does not prove the theory. In the first place, the glomerular urine would need to be hypoisotonic (and there is some direct evidence that it may be so); but as we have seen, a hypoisotonic urine can not be formed by filtration alone, as Forster supposed. The theory would need to be modified in the sense that free chlorids or sugar stimulate the renal cells to their secretion, whilst bound ions do not have this action—which converts the theory from a physical one into an essentially vital one. Furthermore, it has been found impossible to demonstrate the existence of such compounds by any physical or chemical means—the latest attempt by Rosenfeld[43] having again proved negative. This is pretty strong evidence against the entire theory; at least it would be necessary to assume that the compounds are of a kind at present unknown to physics and chemistry. Nevertheless, the empirical agreement between facts and theory is so striking, that the search for new methods of demonstrating the existence or non-existence of such compounds does not appear to me as useless.

LOEWI'S THEORY.

Another theory which involves the conception of colloid-compounds is advanced by Loewi.[44] According to

41. (a) Arch. f. exp. Path. u. Pharm., 1902, xlviii, p. 410; (b)
42. Forster: Ztschr. f. Biol., 1873, ix, p. 297.
43. Rosenfeld: Biochem. Ztschr., 1906, iii, p. 335.
44. (a) Arch. f. exp. Path. u. Pharm., 1902, xlviii, p. 410; (b) Ibid., 1903, l, p. 326; (c) Ibid., 1905, liii, p. 15; (d) p. 33; (e) Ibid., p. 49.

this theory, as in Forster's, the free substances are eliminated by glomerular filtration, with partial reabsorption, somewhat after Cushny's theory. Unlike Forster, Loewi assumes that the compounds are also eliminated, but by tubular secretion. Another difference between the two theories is that Loewi believes that each substance occurs as a rule in only one form—either all of it is free or all is combined—whereas Forster believed that the same substance always existed in both forms.

Loewi's theory is based on the assumption that the common diuretics act by increasing glomerular pressure, and hence filtration. Such constituents as are eliminated by filtration would therefore be increased by diuresis; whereas those which are "secreted" would not be increased. These being once determined and accepted, one can, by reversing the argument, ascertain which diuretics act on filtration and which on secretion.

Loewi's own results agree with these explanations; but in the work of other experimenters (Asher, Weber) results are found which would lead to different conclusions, when interpreted by the same logic. However, the logic itself is open to criticism, for the conclusions are based on assumptions which are still in dispute, and which must be proved before the demonstration of the theory need be considered.

ASHER'S THEORY.

Asher does not deny that changes in the composition of the blood, when they exist, influence the urine; but he believes that the influence is not to be explained by filtration, but by modifications in the functional state of the kidney cells. In those common cases in which the alteration in the blood are inconspicuous or hypothetical, he believes that the supposed functional changes in the kidney are brought about (without the intermediation of the blood) in some unexplained way, directly by the tissues. To prove this theory, he and his pupils have made a series of experiments in which they have attempted to alter the functional state of either the kidney cells directly, or of other organs[46]; what Asher calls the direct and indirect activity method.

The results as a whole show that some conditions of the body do not influence the urine, while others alter it profoundly. This doubtless agrees with Asher's theory that the urine is influenced by the state of the kidney cells rather than by the composition of the blood. Indeed, it may be granted that the results are more easily explained by this theory than by any other. However, too many unknown factors are involved to consider the proof as at all positive.

The experiments of Waldstein[46g] are more convincing. He investigated the rate of urine formation under the influence of the transfusion of blood from another animal, and found that the introduction of additional blood caused a good diuresis in well nourished animals, but had little effect in fasting animals. It was practically immaterial whether the transfused blood came from a well nourished or from a fasting animal. It would appear, therefore, that the composition of the blood is of much less importance than the susceptibility of the kidney, as determined by the preceding nutrition of the animal.

46. (a) Asher (L.) and Cutter: Ztschr. f. Biol., 1900, xl, p. 535; (b) Asher: ibid., 1903, xlv, p. 121; (c) Tropp: ibid., 1903, xlv, p. 143; (d) Asher: ibid., 1904, xlvi, p. 61; (e) Michaud: ibid., 1904, xlvi, p. 198; (f) Asher and Bruck: ibid., 1904, xlvii, p. 1; (g) Waldstein: Biochem. Ztschr., 1906, ii, p. 1; (h) Rosenfeld: ibid., iii, p. 35.

THE ACTION OF DIURETICS.

This has been touched on incidentally in the preceding. We have seen that Cullis localized the action of salts in frogs, mainly in the glomeruli; that of caffein and phlorrhizin in the tubules; urea in both. Loewi, in mammals, by the use of different methods, also locates the action of salts in the glomeruli and phlorrhizin in the tubules; but caffein and urea act, according to him, exclusively in the glomeruli. In connection with caffein, he discovered the interesting fact that it may dilate the renal vessels without changing the volume of the organ. According to my work, the diuretic action of salts corresponds to their action on filtration; hence they would act on the glomeruli.

It will be seen that there is practical unanimity among these investigators in the opinion that salts act mainly on the glomeruli, and phlorrhizin on the tubules; as to their mode of action—whether they cause a vital stimulation, or a merely mechanical modification of filtration through circulatory changes—there is the usual diversity of opinion. The statements in regard to the diuretic action of water are less positive, although it is generally held that it acts in much the same manner as the salts. There is complete disagreement as to the site of the action of urea, and especially of caffein. It must be remarked, however, that none of the evidence which has been brought forward in the attempt to localize the action of diuretics comes up to the rigorous standard which I have set.

The study of diabetes insipidus and of polydipsia, has also failed to throw much light on the subject, although it has led to interesting empirical results. E. Meyer[49], for instance, has shown that the two conditions agree in an excessive output of a very dilute urine; but they differ in that the concentration of the urine can be raised at will in polydipsia by administering salt; whereas in diabetes insipidus, the salt does not increase the concentration, but merely causes greater thirst and therefore a greater diuresis. In other words, the kidney cells are incapable of secreting a concentrated urine—pointing to the importance of the functional state of the epithelium in the sense of Asher. Another rather interesting fact is that the ordinary diuretics do not increase the polyuria in either diabetes insipidus (Meyer) or in polydipsia (Sollmann and Hofmann[50]). It is also worthy of notice, as remarked by the last named investigators, that an intense and prolonged polyuria does not cause any demonstrable injury to the kidneys.

This, however, brings us to those problems which are of clinical interest, with little bearing on the theoretical questions of the mechanism of urine formation. I shall therefore conclude this review by summing up what is, in my opinion, the present status of the subject.

CONCLUSIONS.

The investigations which we have considered seem to me to justify the following conclusions:

1. *Excretion Through the Glomeruli and Tubules.*—The modifications of Nussbaum's experiment prove that in frogs' kidneys all the normal urinary constituents can be excreted vicariously by either the glomeruli or tubules, but the elimination of water, and probably of most of the other ordinary constituents occurs normally only by the glomeruli, and only under unusual conditions by the tubules. Certain pigments, on the other

49. Meyer (E.) Deut. Arch. f. klin. Med., 1905, lxxxii.
50. Sollmann and Hofmann: Amer. Jour. of Med. Science, February, 1905.

hand, are excreted exclusively by the tubular epithelium. Attempts to separate the functions of the glomeruli and tubules in mammals have not thus far led to decisive results. It is probable, but not proved, that the same conditions prevail as in frogs. There is no conclusive evidence that urea is secreted differently from the salts.

2. *Secretion or Reabsorption by the Tubular Epithelium.*—As stated, the tubular epithelium can secrete all the urinary constituents in the frog. It is highly probable that it secretes pigments in mammals. It is proven that it secretes sugar under the influence of phlorrhizin. There can be no doubt, therefore, that it is capable of secreting some substances, but there is no definite evidence as to whether any of the normal constituents are normally secreted by this epithelium. Reabsorption under normal conditions is neither proved nor disproved; however, its acceptance furnishes the clearest explanation of many phenomena. If it exists it must be selective, discriminating between the different constituents and varying with conditions.

3. *Filtration in the Kidney.*—Filtration through the glomeruli is physically possible, because it occurs in dead kidneys. The influence of saline diuretics, of changes of circulation, etc., on the urine flow corresponds closely in the living and dead kidneys. This indicates that filtration is probably an important factor in the formation of urine, but there is no direct proof. The composition of the urine can not be explained by filtration.

4. *"Secretion" by the Glomeruli.*—It is very probable, though not proved, that glomerular urine may, at times, have a much lower concentration than the plasma. The formation of such a fluid would probably require a force exceeding the available filtration pressure—in other words, it would constitute a secretory process.

5. *The Concentration of the Urine.*—It is very probable, though not proved, that the urine ordinarily becomes more concentrated as it passes through the tubules. At all events, the formation of a urine of greater concentration than the plasma requires an unknown force—whether secretory or absorbing—which must be classed as vital.

6. *The Regulation of the Urine.*—There is no satisfactory explanation of the adaptation of the urine to the needs of the body, none of the proposed theories resting on conclusive proof.

7. *The Action of Diuretics.*—There is no binding evidence as to the mechanism of any of the diuretics, but it is highly probable that salts act physically and mainly on the glomeruli, and that phlorrhizin acts on the tubules. The diuretic actions of water, urea and caffein are even more obscure.

THE IMPORTANCE OF ICE IN THE PRODUCTION OF TYPHOID FEVER.*

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We may endeavor to settle this question directly by determining whether epidemics or scattered cases of typhoid fever have been traced to ice, or, failing in this, we may try to estimate the probability of such infection by learning the duration of life of the typhoid bacillus after freezing.

The total number of instances of typhoid fever which have been directly traced to ice infection are remarkably few. I have been unable to trace more than two or three. One was in France, where a group of officers placed ice made from water polluted by a sewer in their wine and afterward developed typhoid fever, while those of the same company not using ice escaped. A second case was in a small epidemic brought to my notice which occurred in those who used ice from a pond. It was found that water directly infected with typhoid feces had flowed over its frozen surface and been congealed there. If typhoid fever is communicated through ice, except under exceptional conditions, it is remarkable that so few cases are traced to it.

The fact that freezing kills a large percentage of typhoid bacilli makes it indeed possible to conceive that ice from moderately infected water contains so few living typhoid bacilli that only the exceptional person here and there becomes infected, and so the source of the infection remains undetected.

If this be true and scattered cases occur, there should be at least some increase on some or every year in March, April and May in such a city as New York, where four-fifths of all the ice consumed is from the Hudson River, which is known to be contaminated with typhoid bacilli. The people of New York use ice very freely and most of them put it directly in their water or place their vegetables on it. The new ice from the Hudson River is gathered in January or February and stored on top of the left-over ice, and thus shipments to the city are immediately begun. It is an established fact that typhoid bacilli in ice are most abundant during the days immediately after freezing. At the end of two months less than 1 per cent. of the original number survive.

If Hudson River ice produced an appreciable amount of typhoid fever, this would then be noticeable in March and in April and perhaps in May.

When we examine the records for the past ten years we find no increase of typhoid fever in Greater New York during those months, with the one exception of the present year, when we had in the Borough of Manhattan a sharp outbreak lasting four weeks. This outbreak did not occur at all in Brooklyn. As the people of Brooklyn drank different water, but received ice from the same places of the Hudson River as those of Manhattan, this directed attention to the water or milk rather than the ice. Examination of the Croton watershed at the time showed that a small epidemic of typhoid existed there and that pollution of the water was probable. This suggested still more strongly that the water and not the ice was the cause of the typhoid infection.

It happened that most of the cases occurred in those living in the section of the upper West Side, where only well-to-do people live. An investigation showed that the majority of the infected had used only artificial ice and several had used no ice in their water at all.

Let us now turn our attention to the life of the typhoid bacillus in ice in laboratory experiments. The first important investigation was that of Prudden, who showed that typhoid bacilli might live for three months or longer in ice. This experiment is frequently wrongly interpreted, as when a recent writer states: "It has been amply demonstrated that the germs of typhoid fever are not killed by freezing and that they have been known to live in ice for long periods of time."

It is true that in Dr. Prudden's experiment a few typhoid bacilli remained alive for three months, when the experiment was terminated, but these were but a small fraction of 1 per cent. of the original number.

* Read in the Section on Hygiene and Sanitary Science of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

Following Prudden's experiment Sedgwick and Winslow in Boston and I in New York City carried on independently by a series of experiments. These led to the same conclusions. A table summarizing a final experiment of mine in which twenty-one different strains, mostly of recent isolation, were subjected to the test is given below.

In these experiments twenty-one different flasks of Croton water were inoculated each with a different strain of typhoid bacilli. In one a little of the feces rich in typhoid was directly added. The infected water in each flask was then pipetted into thirty tubes. These tubes were placed in a cold storage room in which the temperature varied from 20 to 28° F. At first tubes were removed and tested twice a week, later once a week. The object of using so many different strains was because it has become evident that some cultures lived longer than others.

LIFE OF TWENTY-ONE STRAINS OF TYPHOID BACILLI IN ICE.

	Average number of bacilli in ice.	Percentage typhoid bacilli living.
Before freezing	2,560,410	100
Frozen three days	1,089,470	42
Frozen seven days	361,136	14
Frozen fourteen days	203,300	8
Frozen twenty-one days	10,280	0.4
Frozen twenty-eight days	4,540	0.17
Frozen five weeks	2,950	0.1
Frozen seven weeks	2,302	0.09
Frozen nine weeks	127	0.005
Frozen sixteen weeks	107	0.004
Frozen twenty-two weeks	0	0

At the end of five weeks the water infected with six cultures was sterile, at the end of sixteen weeks only four strains remained alive.

Two interesting investigations of Hudson River ice have just been completed. One by Dr. D. D. Jackson for the city and the other by Dr. C. E. North for a private laboratory.

There was noticed a considerable difference between the number of bacteria in the top, middle and bottom layers of ice. This is natural, since while water in freezing from above downward markedly purifies itself, 75 per cent. of the solids and a fair proportion of bacteria being eliminated, yet this can not happen in the case of the snow blanket which becomes flooded by rain or by cutting holes through the ice. Here all impurities, such as dust and leaves which have fallen on the surface and dirt which may come from the water, remain with the bacteria which they carry. The bottom ice, being the most recently frozen, has had least destruction by freezing. Dr. Jackson's report gives us a rather unpleasant impression of Hudson River ice. He states that most of the samples either at the top or bottom show intestinal germs. The worst portions of the ice showed from 1 to 10 bacilli of the colon group per c.c. These were taken above or less than five miles below Albany. Some of this ice might aptly be termed solidified sewage.

The analysis of the twenty-five samples shows, as one would expect, that the surface of the ice just at Albany was bady contaminated, one c.c. of melted ice averaging about 15,000 bacteria for four samples. Only one of the twenty-one samples taken at different distances below Albany showed over 1,000 per c.c. A sample from top of a cake of ice obtained two miles below Albany showed only 14. The other twenty samples had on the average 105 per c.c.

Dr. North, in his investigation, examined the ice from forty spots between Hudson and Albany. He took samples from the top, middle and bottom of each cake and the water of the river. He has kindly permitted me to use some of his figures.

The river water in the forty specimens averaged 1,800 bacteria per c.c., the top ice 306, the bottom ice 36 and the middle ice 14. Only four specimens of top ice had over 500 bacteria per c.c., none of the specimens of middle or bottom ice.

Thirty-three of the specimens of water had over 500 and 23 over 1,000. Colon bacilli were obtained from but one specimen of the middle ice, two from the bottom ice and twelve from the top ice.

The great destruction by freezing is noticeable in these figures. Even the top ice soiled by the horses and men gathering it contained but 16 per cent. as many bacteria as the water from which it was contained. The bottom ice, the last to be frozen, had but 2 per cent. of those in the water.

CONCLUSIONS.

The danger from the use of ice produced from polluted water is always much less than the use of the water itself. Every week that the ice is stored the danger becomes less, so that at four weeks it has become as much purified from typhoid bacilli as if subjected to sand filtration. At the end of four months the danger becomes almost negligible, and at the end of six months quite so. The slight danger from freshly cut ice, as well as the natural desire not to put even sterilized frozen sewage in our water, suggests agreement with the report of Dr. Jackson, that portions of rivers greatly contaminated, such as the Hudson within three miles of Albany, should be condemned for harvesting ice for domestic purposes—such ice alone to be used where there is absolutely no contact with food.

ROENTGEN RAY TECHNIC IN DERMATOLOGY.*

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The value of Roentgen rays in the domain of dermatology has been thoroughly tested and cordially approved. Its place in medicine, as a therapeutic agent, is now established on a sound and rational basis. I have, therefore, attempted to prepare a brief paper on "Roentgen Ray Technic in Dermatology," because the technic, or, if you wish, the art, the skill of application, is the one great prime essential demanded of every operator, if he would attain the very best possible results. So diametrically opposed are the announcements made relative to the value, the uses and the results attained by the Roentgen rays in cutaneous affections, that an explanation for these varying opinions must be sought in the differences in technic employed by the great army of *x*-ray therapists the world over.

Needless to say, the Roentgenologist must be an adept at his work. The hand of the tyro holds no comparison with the experienced operator in this field of endeavor. In Roentgen diagnosis differences in technic result in excellent or defective skiagrams. What is true here holds equally well in the therapeutic application of the rays. In order to employ this agent so that satisfactory results may be obtained, it is primarily essential that its use as a diagnostic means should be perfectly mastered, and that the operator have more than an ordinary knowledge of the principles involved and likewise an

* Read in the Section on Cutaneous Medicine and Surgery of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

easy familiarity with the manipulation of the apparatus.

Like all new and growing sciences, this subject is beset with embarrassing inconsistencies. In a certain skin disease one learned authority declares that the employment of a soft tube is imperative; while another decries the soft tube and asserts that a hard tube alone in that special case is effective and permissible. Some specialists condemn the repeated and gradually ascending serial irradiations, urging the massive dose treatment as the most logical and curative. Others give anywhere from one to six séances weekly, believing that massive doses are ineffective and dangerous. There are many excellent students of the science who are assured that the production of an erythema of varying degree is essential to a cure. Scores of other *x*-ray workers denounce any such procedure as wrong in conception and at variance with the dictates of good judgment. Coupled with such flagrant contradictions are all sorts and manner of opinions as to the distance of the tube; these vary from 1 to 3 inches from the part, all the way up to 25 to 40 inches, and even more; it is, therefore, necessary to determine some arbitrary rules that will give the most effective quality and quantity of the rays applicable in diseases of the skin.

Incidentally I may remark that, while variations in the technic for each and every special case is imperatively demanded, the one great *desideratum* is the determination of the *quality* of the rays best adapted for the particular case under treatment. The distance of the tube, the duration of treatment, etc., have a minor value and are of secondary importance in technic. The most important factor is the selection of the rays most suitable and best adapted for the cases under consideration. The complex nature of the Roentgen rays offers no alternative to the operator in our present state of knowledge; he must always employ the same compound rays, but the preponderant quality of rays in any bundle can be approximately determined and regulated. Resolution into their component parts has thus far baffled the skill of the physicist and yet we can judge of the quality we are employing.

From Roentgen therapist's standpoint, dermic lesions may be classified as follows:

1. Where slight stimulation is required (acne).
2. Where epilation is necessary (hypertrichosis).
3. Where absorption of pathologic tissue is desired (eczema, psoriasis, lupus).
4. Malignant types of disease (epithelioma).

The technic will, of course, vary with the special character of the lesion to be irradiated. This may be accomplished by varying both the quality and the quantity of rays, which takes into the consideration the vacuum of the tube and its distance from the part to be treated, duration and frequency of the exposures, etc. The apparatus required for effective treatment is practically identical with that employed for skiagraphic work. For therapeusis, a coil of 7 or 8 inch (18 or 20 cm.) spark length will suffice, but it must be used properly and be of good quality.

In superficial cases, the irradiations should be mild in character, thus producing but slight stimulation. In these cases it is our aim to bring about a constructive, not a destructive, condition of the affected area. From a soft tube rays emanate capable of specially effecting tissue in the vicinity of the superficial papillary network, but liable to bring about atrophy and telangiectasis, with the production of epilation. They are most applicable in such affections as psoriasis, eczema, rodent ulcer, etc., the intensity of current, distance of tube, and frequency of application altering the effect.

In deeper structures hard or medium hard tubes may be employed. We may call into requisition the medium tubes when the deeper structures are to be treated, with but little effect on the superficial layers, as in hypertrichosis. In using a hard tube, it is essential that the less easily penetrating rays be filtered, prior to the passage of the remaining rays to the deeper-seated structures. It should not be forgotten that lengthy irradiations with soft tubes will not affect the deeper parts, because the great number of rays will suffer absorption by the cuticle.

DISTANCE OF THE TUBE.

The distance of the tube from the part depends on the quality of the tube, on the size of the area to be irradiated and whether a rapid reaction is desired or not. By some it is asserted, in theory, that the distance of the tube from the part should be proportional to the height of the vacuum and inversely as the part to be affected is distant from the surface. As a rule, hard tubes should have an anodal distance of from 12 to 15 inches (30 to 38 cm.) from the area to be treated; with soft tubes 6 or 8 inches (15 or 20 cm.) is effective. The current should be generated by an induction coil.

The interrupter most frequently employed in this connection is of the mechanical type; its two prominent advantages are the ease of its manipulation and its cleanliness. The duration of irradiations is dependent on the source of the current (coil or static machine), on the patient's susceptibility and largely on the nature of the affection. As was intimated previously, some authorities advocate brief, frequently repeated exposures, gradually increasing the dose; others approve of massive doses at longer intervals.

FREQUENCY OF THE IRRADIATIONS.

The frequency of irradiations will naturally depend on several factors: character of the lesion, rapidity of action required, duration of each séance, and the distance of the tube from the lesion. It would seem the part of wisdom to expose the patient twice or thrice weekly for the first two weeks, and then to discontinue treatment for a similar period of time, seeking in the interval for the occurrence of any untoward signs or symptoms. Very close observation is imperatively demanded when treatment is administered every other day. Some prefer this serial method, but the patient's susceptibility must never be lost sight of; if, however, vigilant care is exercised to see that the affected area is not overexposed, then the applications may be arranged more closely together for an almost indefinite period.

I regret that progress in Roentgen ray technic in the past five years has not kept pace with the progress of time. What was empirically true then is empirically true now. Two great questions were propounded then: What is the true nature of the rays? What is its physiologic action on the human tissues? To-day these queries remain unanswered. The progress made and the advances wrought throughout this period are referable to the many and varied improvements in the apparatus.

QUALITY AND QUANTITY OF RAYS.

The methods employed for estimating the quality and quantity of the rays is a subject of paramount importance. By quality I mean the property that these rays possess of penetrating the tissues; some pencils of these

rays may penetrate quite easily; on the contrary, others may be less penetrating, becoming readily absorbed by the tissues.

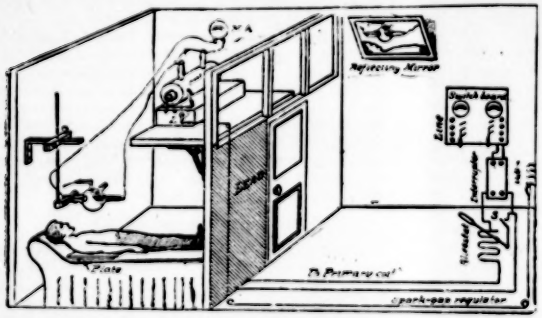
For estimating the quality of the rays, I employ the following methods: Amount of current going to the primary coil, viz., volts and amperes; length of spark in parallel gap; milliamperage of the secondary induced current; radiochromometer of Benoist.

By the quantity of the rays I mean their total action on the tissues, as is manifest by the duration and the effects of the irradiation. I measure by the amount of current passing through the milliampere meter and the length of irradiation and distance of tube from patient.

SPECIAL TECHNIC.

In a brief paper such as this, I will content myself merely by touching on the technic that I employ in some common dermic affections. This must necessarily be only the average technic as it varies with the individual case.

1. *Where Slight Stimulation Is Required (Acne).*—This form of disease requires the most mild action of the *x*-rays, the irradiation just strong enough to cause a slight stimulation. The production of an erythema is not desirable, especially when the lesions are situated on the face. Atrophic condition of the pitted areas may result where the follicles are advanced in the disease. Pigmentation rarely occurs and should never be permanent.



This treatment may need to be repeated several times, but the first course of treatment often causes the disappearance of the acne. A medium vacuum tube equivalent to from 2 to 3 inches (5 to 7.5 cm.) spark length, anode from 12 to 18 inches (37.2 to 45 cm.) from the part, 1 to 2 milliamperes in the secondary coil, about No. 3 of the Benoist scale; three exposures a week for two weeks, with a duration of from 2 to 3 minutes.

2. *Where Epilation Is Necessary (Hypertrichosis, Favus, Ringworm).*—In the treatment of these conditions utmost care should be exercised in order to prevent ill results, and to obtain the desired effect, the parts often affected being the face and chin or upper lip. The utmost care is necessary to ascertain the susceptibility and the dosage. Blondes often show a greater susceptibility to the action of the rays than do brunets. I have been in the habit of irradiating first other portions of the body, for example, the arm, in order to gauge my dosage; then after approximating the dose I irradiate the face, etc. The treatment should be just enough to cause the gradual atrophy of the hair follicle without producing any erythema. After first epilation let two or three weeks elapse and then irradiate mildly in order to render the epilation permanent, being careful, however, not to cause any pigmentation or telangiectasis or pitting of the face, protecting well the portions that it is not desired to erradiate. Erythema of the skin is not necessary, but in spite of every precaution it often occurs; for such an accident cease the treatment and apply zinc oxid ointment.

A medium soft tube at a distance of from 15 to 20 inches (37 to 50 cm.) from the face, with a spark length (parallel) of from 1 to 4 inches (2.5 to 10 cm.) always with mechanical interrupter, 1 to 2 milliamperes, B scale No. 2 to 4, beginning with 2 minutes each exposure thrice weekly first two weeks and then increase up to 2 or 3 weeks. Cease then and wait for several weeks; do not be hasty; let the action of the rays work gradually.

3. *Where Absorption Is Required (Eczema, Psoriasis, Lupus, Etc.).*—The treatment of this group of cases can be approximated in a single form of technic because there is so much variation that the conditions overlap each other in severity and the essential is the production of resolution and absorption. It is impossible in a brief summary of technic to point out more than the result desired and a technic which can be varied to suit the individual case. It suffices to say that the same technic as above, varied by more active rays, i. e., a lower vacuum, and a closer distance of tube with longer exposures, will produce a severe reaction, the intensity of the reaction being regulated by the disease under consideration and its clinical manifestations. For very intense reaction which is seldom employed and only in very resistant cases by expert clinical observers, the following technic is permissible: Tube showing the cathodic stream very faintly and only slight green fluorescence. Parallel resistance ¼ to ½ inch (0.5 to 1.2 cm.), the anodal distance varies the intensity of the effect, as also the milliamperes, as this tube is capable of carrying a very high amount of current even with a weak coil. The distance can vary from 6 to 8 inches (15 to 20 cm.), the intensity of effect corresponding. The milliamperage likewise can range from 1 to 6 milliamperes. The duration of each exposure also depends on the reaction desired. These treatments can not be repeated until the effect of a previous treatment has been observed. They are very severe and dangerous, treatments, unless employed by an expert clinical observer, should seldom be employed.

The average treatment for these lesions is a soft tube without cathodic rays, having a parallel spark resistance of about 1½ inches (4 cm.) to about B 2. The current should not be over 2 milliamperes. This treatment can be given with care three times a week with a duration of 5 to 10 minutes. The resistance of the tube or its penetration must be varied if resolution is delayed in deep seated foci. This depends on the clinical result observed.

4. *Malignant Types of Diseases (Epitheliomata).*—Certain factors must be considered in irradiating these

growths, viz.: the character of the lesion, its rate of growth, location, glandular involvement, age of the patient, the state of health, etc. When the epithelioma has grown rapidly, I advise an immediate operation and subsequent *x*-ray treatment.

The severity of an epitheliomatous growth is largely dependent on the proximity of the lymphatic chain of glands. Thus, an ulcer of the lower lip is less favorable. For cutaneous epitheliomas, place the anode of tube about 10 or 12 inches (25 or 30 cm.) distant from the part with a soft medium vacuum, giving a spark length (parallel) of from 1 to 2 inches (2.5 to 5 cm.), irradiate thrice weekly for three weeks, duration of each séance being about 6 or 8 minutes, 1 to 2 milliamperes passing through the tube, Benoist's No. 2 or 3 scale.

Roentgen dermatitis may involve both the operator and the patient. As to the patient, the development of a Roentgen dermatitis is very prone to occur in irradiating cutaneous affections. It, therefore, becomes incumbent on the operator to watch most carefully for the appearance of the earliest symptoms, such as itching and erythema. It seems proper to remark just here that many operators aim to bring about a slight erythema, urging that its production exerts a curative action on the affection being treated. Other operators incline to the belief that a moderate tanning of the skin is a desideratum.

It is always my aim to prevent an occurrence of either of these effects. Individual susceptibility, the peculiar location of the lesion, faulty technic and inexperience of the operator, are all factors that increase the frequency of Roentgen dermatitis.

To lessen the likelihood of this complication, many advise that the Crookes tube be covered with sheets of thin lead, or encased in a box lined with lead, or that it be painted with some opaque material. A very clever device is to have the active hemisphere made of lead glass and provided with various sized diaphragms, as is well exemplified in the Piffard vacuum tube. My own personal preference is the rubber shield and diaphragm, the patient being at the same time protected by sheets of lead that have been previously grounded.

In order to diminish the quantity of the soft or less penetrating rays and to effect their absorption, the employment of filters is commended by some practitioners. Maragliano eliminates the non-penetrating rays by the use of diachylon (as a rule, disposed in a thickness of four layers), which readily adheres tightly to the skin. Pfahler and Schamberg advocate the use of wet leather, but the fact that moisture and leather absorb the rays to a too great extent and that consequently a limited quantity of rays is sent to the diseased area, my own preference reverts to the employment of a thin sheet of aluminum, 1/32 of an inch (1 mm.) in thickness (grounded), which eliminates most largely the soft rays, and is a valuable accessory to the *x*-ray worker in his treatment of the deeper structures. In treating some conditions this must be omitted.

As I have said previously, it is the duty of the Roentgen therapist to watch most carefully for the oncome of cutaneous itching and the appearance of slight erythema; if the first stage of a dermatitis seems imminent, the operator should immediately cease with the irradiation. I at once purge the patient, apply zinc oxid and employ cold compresses. In cases of vesiculation, I incise and drain the serum. When the dermatitis is of the second degree I approve of the use of a normal salt solution applied on a compress. I do not favor the employment of carbolic acid solution, corrosive sublimate solution, etc. One of the best dressings is simple sterile gauze.

It is with sincere regret that I am compelled to say that there is no known curative agent to meet that very distressing condition, unfortunately too well known to my associates, namely, chronic Roentgen dermatitis. It is my belief that meddlesome interference is undoubtedly the cause of much suffering, of loss of fingers and hands, and, indeed, of many precious lives. There is entirely too much medication, and the application of injurious and irritating liniments and ointments.

I am getting relief from the dermatitic condition of my hands by as little medication as I can conceive. I immerse them in hot water for ten minutes daily and apply a slight quantity of cold cream or lanolin to prevent cracking of the skin, completing the details by encasing the fingers in sterile gauze.

For the past five years I have avoided remaining in the same room with the patient, devising a reflecting mirror that is placed at an angle on the ceiling, which, of course, faithfully reveals the fluorescence of the tube and the position of the patient. I occupy a place in the adjoining room, whose partitioned wall is lined with layers of lead, one-half an inch in thickness (see illustration).

In an experience of 8,000 exposures for diagnostic purposes, I accidentally produced epilation once and erythema once; my assistant produced dermatitis once, in a fluoroscopic examination of ten minutes' duration, while examining for gastroptosis.

I always warn my patients of the possibility of some ill effect from the action of the rays. When about to treat acne and hypertrichosis, I pronounce this admonition with even greater emphasis.

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TREATMENT OF ACNE AND CHRONIC ECZEMA.*

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The successful treatment of acne and eczema means something more than a hasty prescription for a tonic and an external application. Routine treatment without a careful study of the etiology, pathology, stage and type of the disease, shows lack of clinical knowledge. The treatment of any skin lesion demands of the practitioner a sound knowledge of general medicine and experience of the various therapeutic agents employed.

There are probably no two skin lesions in which a larger number of remedies have been employed. Sabouraud states: "There is not a single treatment for eczema, but a thousand, which proves that there is not a single good one."

As every one is familiar with the etiology and pathology, and also with the older routine remedies, an effort will be made to show some of the indications and the contraindications of the Roentgen rays. A great deal has been said and written in regard to the value of the rays in acne and eczema, but a large percentage of cases have not been treated intelligently.

The employment of the Roentgen rays in dermatology is a branch of medicine that demands a knowledge

* Read in the Section on Cutaneous Medicine and Surgery of the American Medical Association, at the Fifty-eighth Annual Session, June, 1907.

of the disease under treatment as well as a knowledge of the physiologic actions of the rays and the variations necessary to produce the desired results. Then, in order to treat skin lesions with the *x*-ray, the physician should either be familiar with the rays, as well as dermatology, or else refer his patients where they can have the proper treatment when the rays are indicated. The following replies of Prof. V. Neuman of Vienna and Dr. Leslie Roberts of Liverpool, England, to Dr. Biddle's circular letter, published in the *American Quarterly of Roentgenology* show what divergent opinions exist:

DR. LESLIE ROBERTS, Liverpool: In reply to your questions relating to the *x*-ray treatment, I may say that I consider the treatment of acne rosacea, eczema, or psoriasis by the *x*-rays to be irrational, improper, and utterly inadmissible on scientific grounds. I am afraid that those who talk of "curing" these diseases by rays do not clearly understand the nature of these diseases.

PROF. V. NEUMAN, Vienna: I have had a great deal of experience with radiotherapy of acne, acne rosacea, eczema and psoriasis. There are cases which can not be treated properly otherwise. Of course, I use our older methods in combination with Roentgen rays. Acne of the face and back is often cured radically by a few séances, but acne rosacea, with tumefaction of the nose, is only very little improved.

Chronic eczema, wet and dry form, yield often quickly to the new treatment, but not ulcers of the leg.

Psoriasis in its chronic patches, ought to be exposed strongly to *x*-rays; the acute disseminated form needs only weak séances. The disease is not cured radically though.

The *x*-rays ought to be handled only by specialists; if there are none at hand, the rays ought better to be replaced by our older methods of treatment. But a specialist with much practice, will, by the use of the dosemeter of *x*-rays (Sabouraud, Noire and Kienbock, with milliamperemeter) always avoids burns; therefore, in his hands, radiotherapy will never prove harmful.

During the past two years I have visited a number of skin clinics in some of the larger cities and have been impressed with the different methods of treatment and the results. Any one who has gone to the different skin clinics and has studied the cases and the methods of applications of the Roentgen rays and has not depended on a circular letter or some other unreliable source of technic can account for both success and failure of the Roentgen rays in dermatology. In the past, defective technic has included overconfidence and rashness or timidity in the uses of the rays, and many physicians have not produced results because they were afraid of producing an excessive dermatitis, and have given an underdose.

Whenever there is a reliable meter to measure the kind and amount of rays given off by a tube, dermatologists will be able to employ the rays more uniformly and there will not be such difference of opinions.

ACNE.

After a faithful trial in the mild cases, of both local and constitutional treatment for two months, if there is no marked improvement, then I apply the Roentgen rays, but in pustular and indurated acne time is usually lost by waiting. In this class of cases, the time, in order to affect a cure, is not shortened, but the recurrences are less.

The local treatment of acne consists in the removal of comedones, infiltrates and abscesses. Jacobi states that the employment of sulphur and ichthyol soaps and hot water accomplishes the removal of excessive fat and opens the follicles so that their contents can be evacuated. Subsequent vigorous scaling of the skin is of use, and may be carried out by means of resorcin or naphthal paste or by painting with tincture or iodin or iodin glycerin.

Now the Roentgen rays remove the comedones and usually this takes place during the first few treatments; it is most likely due to the first or stimulating actions of the rays. Following this, there is marked desquamation and, thirdly, a decrease in the size of the sebaceous gland.

The first two effects of the rays can usually be accomplished by medication and will generally cure the mild cases, but medication has little or no effect in decreasing the overactive sebaceous glands. In pustular acne, the rays seem to have a fourth action on the staphylococci by rendering the soil inert.

In treating cosmetic lesions like acne, the greatest caution must be used to prevent any undesirable results. It is absolutely necessary to study the quantity and quality of the rays. In selecting an acne tube, one is taken which maintains a uniform vacuum and which can be kept low. A new tube is never used unless the rays are passed through an aluminum filter. I have been in the habit of employing a tube very low in vacuum, one which will scarcely show the bones in the hand, and with the anode placed at eight inches from the skin and with one and a half milliamperes of current passing I give from five to ten minutes' exposure, depending on the condition of the patient, until nine treatments are given. By this time I am usually able to determine the amount of radiation necessary to cure the patient. As it is for the cosmetic results that these patients are treated, and as it is necessary to vary the quantity of radiation necessary to produce the best and most uniform results, three weeks of trial treatment seems advisable. By this method of varying the amount of radiation results should be uniform and all danger of an excessive dermatitis avoided. Probably there is no skin lesion in which a more exact amount of rays is necessary to produce uniform results. It might be compared to radiography, where every one realizes that unless the proper exposure is made no picture is produced. As before stated, the amount of radiation varies with the individual case and may vary as much as in taking a picture of a hand and a shoulder.

ACNE ROSACEA.

Acne rosacea, while more resistant, has yielded the best results when glandular inflammation predominates. The Roentgen rays appear to act in this condition by causing atrophy of the sebaceous glands and by setting up an irritative desquamation. The principal effect is due to the action of the rays on the sebaceous glands. According to Gassman, the cure of acne rosacea is due to a destruction or degeneration of the blood vessels. It can be readily understood that since the *x*-rays have a selective affinity for glandular structures it requires less radiation to decrease the activity of the sebaceous glands than to cause absorption of the hypertrophic growth of connective tissue or the destruction of the small vessels.

ECZEMA.

Internal treatment is important in a certain percentage of cases, but as a large majority of patients suffering from eczema are in perfect health, and the disease is due to some local cause, local treatment only is necessary. Among the local measures which may be employed are drugs with which all physicians are familiar, and physical agents. Of these, radiant energy is probably the most efficient.

The rays are certainly not indicated in the acute forms of eczema, unless it be to relieve the pruritus which can not be controlled by other remedies, and in most forms of subacute eczema. But in many chronic and rebellious cases which resist other therapeutic agents the *x*-rays have proved efficient. The effects of the rays are most marked in squamous eczema, since it is more chronic and less liable to yield to other forms of treatment. It requires more intense radiation to relieve the pruritus in papular eczema and there is a greater tendency to recurrence than in any other form of the disease. It has been noted by a number of operators that after a few applications of the rays the discharge and itching ceased. The rationalé of Roentgen treatment lies in its stimulation of metabolic processes, especially in chronic inflammations. It has been stated that the rays influence eczema by stimulating the bio-activity of the cells.

In the treatment of eczema by the rays, the location and type of the disease should always be carefully considered, and the indications and the contraindications determined. In deciding on the dose, the character of the lesion, its chronicity and the vitality of the patient must be taken into consideration. Results can only be accomplished by employing rays in proportion to the condition of the patient. In chronic squamous eczema, the local condition of the skin is poor, nutrition is low and there is little vitality. In these cases more than a mild dosage is liable to result in a severe dermatitis. In some cases it may be necessary to give rather large doses, but the clinical experience of the operator should guide him, and experimental knowledge obtained by milder dosage in the same case should be employed before a severe dose is given. While almost any form of Roentgen treatment may effect a cure of eczema if persisted in long enough, if rays of low penetration are used, the treatment is hastened. A low tube is not only more efficient, but prevents unnecessary exposure of the underlying tissues. With the anode placed at ten inches from the surface, with one and a half milliamperes of current passing, providing the patient is in good physical condition, a safe rule to follow is to start with ten minutes' exposure, three times a week, until from eight to ten treatments are given. In my experience, this amount of radiation has been sufficient to clear up the lesions in many cases of squamous eczema, but in some it has been necessary to give a second course of treatment.

THE THERAPEUTICS OF TUBERCULOSIS OF THE SKIN.*

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It may be deemed axiomatic that wherever tubercle bacilli find a resting place in an organism and there set up their characteristic histologic changes, if the focus be so localized that it may be removed entirely, by any agency whatever, this removal will constitute a cure of the disease.

On the recognition of this depends the value of any treatment for tuberculous lesions of the skin. Careful study of microscopic sections of infiltrative types of lupus immediately shows why many of the measures proposed for treatment have no value, except as mere palliatives for some of the annoying symptoms. I have too often seen the claim of a cure made when all that had been accomplished was the temporary healing of an ulcerating surface, the claimant being entirely unaware that a non-ulcerating patch of lupus is often more difficult to get rid of than one that has already broken down.

All tuberculous lesions of the skin are granulomata and consist of an infiltration of small round cells, accompanied by giant cells surrounded by a zone of epitheloid cells, sometimes but not always containing tubercle bacilli.

The ease or difficulty of treating a patient successfully depends on the depth of the tubercle deposit, its extent, its situation, the resistance of the subject to the bacillus of tuberculosis as evidenced in his anamnesia, and the character of the local remedy selected for its control, and the vigor with which it is used.

An internal treatment to be effective alone must cause the tuberculous patches to disappear and perfectly cicatrize. There are no remedial agents which may be depended on to work this wonder, though it sometimes seems as if the goal were about to be reached. Physicians may be deceived by the common experience that chronic lesions of the skin get better or worse, following more or less favorable hygienic surroundings, and are apt to attribute the betterment to some drug given, when the fresh air, sunshine and the improved digestion are the factors which have produced the change.

All dermatologic works repeat parrot-like the injunction to give plenty of cod liver oil to lupus patients. In young persons where its absorption can be assured without digestive disturbances it may be given daily as an inunction in doses of 30 c.c. to 60 c.c. It is best given after a hot bath and in a warm room. I have many times been convinced of its definite therapeutic value in the treatment of tuberculous conditions of all kinds. The objections to its use in this manner is the intense fishy odor which the following formula nearly does away with:

B.	Heliotropin	gr. iii	18
	Adeps lanæ	3vi	180
	Olei morrhuæ	3ix	270

Given by the stomach I think it will more often act as a hindrance to the cure than as an accelerator. Arsenic, if it is tolerated, more particularly if combined with manganese, iron and the bitter tonics, is a valuable adjuvant as a roborant. But mercury in doses of gr. 1/6 (0.01 of the hydrargyri iodidum viride in the form of Garnier pill, or gr. 1/32 (0.002) of hydrargyri chloridum corrosivum given two or three times a day, the same precaution being observed with regard to keeping the mouth clean as when mercury is given to syphilitics, is of decided value in the treatment of dermal tuberculosis. This is without relation to hybrid forms where the syphilitic admixture is manifest and the necessity for specific treatment imperative.

It is difficult to say exactly what value the derivatives of Koch's tuberculin may have in the treatment of tuberculosis of the skin. As a diagnostic agent its importance in doubtful cases is unquestionable; as a therapeutic agent, in times gone by, it has been worse than a failure. I believe that a more general knowledge and application of the opsonic therapy of Wright may demonstrate its great usefulness.

In addition to roborant measures one must use local applications or procedures, having always in mind the necessity for the complete removal of the diseased tissues

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and the varying grades of infiltration, malignancy and destructiveness of the disease process induced in different people by the irritative action of the tubercle bacillus.

Whatever local measure is used and whatever the apparent success attending its use, the pathology of the disease must never be forgotten. Just so long as one "tuberculome" is left anywhere within the limits of the diseased skin, lupus is not cured. It is only after years of observation of the absence of lesions that we can positively affirm a cure.

LOCAL METHODS.

These local methods may be classified conveniently following Brocq[1] and Leloir[2]:

1. *Bloody:* (a) Ablation, (b) curetting, (c) scarification, (d) electro-cautery or Paquelin cautery.

2. *Elective caustics:* (a) Salicylic acid with creosote, (b) pyogallic acid, (c) silver nitrate, (d) silver lactate, (e) lactic acid, (f) Liq. antimony chlorid, (g) electrolysis.

3. *Light rays:* (a) Phototherapy, (b) radiotherapy, (c) heliotherapy.

The choice of method depends on the type of disease and the individual to be treated. Phototherapy, in my mind, is the ideal treatment for the deeper forms of lupus. It is powerful for good and, so far as I can learn, never harms. Its drawbacks are such as preclude its general use. Departure from the method worked out by Finsen[3] does not seem to be successful. "Better than Finsen's" apparatus has from time to time appeared in the market, but it does not stay, because time and a careful observation of little things are essential elements in the contract to cure by the Finsen light. The element of time itself is prohibitive excepting when the disease is confined to a small space, or in the case of those who can not pay at all, or those who can pay anything asked. It is a treatment for the very rich or the very poor.

Radiotherapy in the hands of skilled Roentgen-ray operators has accomplished wonders in the treatment of lupus. I have time and again seen it cure tuberculous fistulæ, soften and break down the dense scars of sclerosed lupus, and melt scrofulo-tuberculous gummæ about the mucous orifices, where repeated and prolonged surgical measures had failed to relieve or cure. I have as often seen it fail to permanently destroy more superficial forms of ulcerative tuberculosis of the skin, and have twice seen it apparently establish on such lesions epitheliomatous changes requiring radical surgical intervention. Even very recently I have seen new tuberlomes develop in surrounding tissue during the daily treatment of a sclerous patch of lupus. Quite often I see deformative telangiectases occur in the scar, and fresh outbreaks from unobliterated lupus nests are not of uncommon occurrence in cases discharged as cured.

Notwithstanding the improvements in apparatus and operative technic, the Roentgen ray is not a safe agent for the unskilled to use. The best operators from time to time occasion, by the very necessity of the intensity of action required in affecting deep seated lesions, very distressing attacks of dermatitis, though they uniformly dislike to acknowledge it, and "burns" are not uncommon with ignorant and irresponsible operators. Add to the frequent uncertainty of its curative action the initial cost of the machine and the heavy charge of maintenance, and we easily see why the greater number of cases of lupus will always have to be treated by other methods. It is of these that I more particularly desire to speak. They, too, are of most value in the hands of experienced and skilled persons, but their success is dependent on observation and patience more than anything else and they require no great outlay of time or money.

ABLATION.

There are a certain number of cases of dermal tuberculosis which are so situated that ablation is easy and absolutely successful. No medical man should ever undertake to remove any malignant neoplasm by operation if he is afraid of losing his professional reputation by the deformity of the scar which may result therefrom. The first essential is that the new growth be removed in its entirety, that the incision be wide enough from the margin of the diseased area to go all around and beneath it until sound tissue is reached for the healing and that all structures intervening—skin, muscle, bone or tendon—be removed. Defects may be nicely tailored by flap sliding or skin grafting. Lang[4] has been the chief exponent of recent years. His reports of results are excellent and he has the courage to apply it to lupus of almost any extent. I have had good success from ablation and present here illustrative cases:

CASE 1.—A woman, aged 65, with disseminated lupus of the face of two years' duration (Fig. 1). At the right inner canthus an epithelioma had developed on a tuberculous base. The photograph shows the results obtained by excision and flap sliding. More than one-third of the lower lid was entirely removed and a new one fashioned from the cheek (Fig. 2). The tuberculous process had involved the outer third of the orbital plate of the frontal bone and the entire outer part of the orbital plate of the malar bone, and the overlying skin and muscles. These tissues were excised and the wound healed by granulation as it was impossible to cover the defect by flap sliding or skin grafting. The other patches on other parts of the face were removed, some by arsenic paste, some by curetting and the application of a 50 per cent. zinc chlorid solution. This woman was treated for six months by a competent and skilled Roentgen-ray operator, the disease continuously growing worse.

CASE 2.—A non-ulcerating patch of lupus (Fig. 3) was removed from the lumbar region of the back of a woman, aged 39, on whom it had existed from her fifteenth year, slowly extending year by year. Note the depth of the tissue removed, the disease extending almost to the muscle beneath. This patch was 9 cm. (3½ in.) long, 9 cm. (3½ in.) wide, and 6 cm. (2⅜ in.) deep. Recovery by granulation was complete in four weeks. She would not agree to skin grafting. She had received treatment for three months every second day by the Roentgen ray from an Omaha specialist without benefit. It was painful when she came to me, and this feature she stated developed during the Roentgen-ray treatment.

CURETTING.

The value of this method of attack on tuberculous foci depends on the thoroughness with which it is done. It is necessary to use firm sharp instruments, both large and small, of the Volkmann and Besnier types (Figs. 4 to 7). These instruments should always be sharp. Without ruthless destruction of sound tissue the use of the curette must yet almost be brutal in order to be curative. I think spreading of the disease after curetting is only to be feared where gentleness is observed in the operation.

1. Brocq (L): Traite Elementaire de Dermatologie Practique, Paris, 1907.
2. Leloir: Traite de Scrofulo, Tuberculose de la Peau Paris, 1892.
3. Finsen and Bie: Mitteilungen aus Finsens Medicinske Lysinstitut in Kopenhagen, Leipzig, 1903.
4. Lang (Edward): Ercebnisse von 240 Operiten Lupus fallen etc., Wien, 1905.

THE ANESTHETIC.

In curetting lupus nodules I always prefer ether anesthesia. The operation may be done under Schleich's method of infiltration anesthesia with a very dilute solution of cocain and adrenalin chlorid in physiologic salt solution. The neighboring skin must be thoroughly cleansed and disinfected and the needle entered well outside of the diseased area, the infiltration first made all around and beneath the patch in the sound tissues before entering the patch at all. The diseased area should also be mapped out by some indelible substance before the infiltration commences, for the process entirely changes the geography of the neighborhood.

THE OPERATION.

In commencing the operation it is best to scar all of the ulcers and make a few thrusts into any deep-seated nodules or hardened tissues with the electric cautery or Paquelin points heated to a dull red heat. This disinfects the débris of the first curetting and renders it surprisingly easier, particularly in sclerotic forms. The whole area of disease should be gone over thoroughly with the larger curettes; then each softened area is entered with the smaller ones, enough force being used to remove all obviously diseased tissue and also to break down the bundles of tissue fibers between outlying lupus nodules. Scissors, knife and forceps may be used to assist in the removal of ragged structures after the curetting.

I believe much of the curative influence observed from the free use of the curette on tuberculous lesions is to be attributed to the inflammatory reaction set up in the surrounding tissues by the mechanical insult causing subsequent destruction of all deposits of low vitality in the immediate zone of operation. The curetting should be slow and thorough until each visible nodule has been broken into and emptied of its contents. The hemorrhage is controlled with hot compresses and any bleeding point that persists may be touched with stick silver nitrate.

It is my custom to cauterize separately each wound with a 50 per cent. solution of zinc chlorid. The application is made by a number of small swabs of cotton rolled on wooden toothpicks. A swab is dipped into the solution and, after shaking thoroughly, applied to the dried curetted nodule and bored into its every nook and cranny. This cauterized surface immediately starts to bleed again, a compress moistened in a hot weak corrosive sublimate solution is applied to it, a fresh swab obtained and a similar application made to each and every one of the exposed nodules. The parts curetted are finally well washed with alcohol and a moist dressing, made by adding boric acid, seven parts, and salicylic acid, one part, to hot water, one thousand parts, and which is commonly known as Thiersch's solution, applied.

The dressing is removed twice a day or oftener if the comfort of the patient requires it, its continuous moisture is assured by a covering of gutta percha tissue. The slough from the zinc comes away usually in less than ten days, and the wound is nearly always healed before the fourteenth day. Where there is a doubt existing as to the amount of tissue involved, and it is desired to clearly map out the infiltrated nodules beforehand in non-ulcerating or dry forms of lupus, this may well be done by the application for a few days of a thick plaster made from common rosin kitchen soap or a 25 per cent. plaster of salicylic acid or Biersdorf's 20 to 40 salicylic-creosote plaster mull, or a 50 per cent. pyrogallic acid paste.

Formerly it was my custom to use the galvano-cautery or the Paquelin cautery to each nodule after curetting. I am satisfied, however, that this is bad practice, for it is frequently followed by keloidal scars. I think it is more useful beforehand to disinfect the ulcerated surfaces and render curettement easier. Should nodules subsequently be observed in the scar they may nearly all be treated and removed by the agents referred to under elective caustics. It sometimes may be necessary to curette portions of the patch again.

LINEAR SCARIFICATION.

Another bloody method which at one time had great vogue but now has fallen into disuse is that of multiple linear scarification as practiced by the celebrated teacher, Vidal. Properly carried out, this gives the least deformative of scars following treatment of severe cases of lupus. The objections to it are that it is painful, incurs the loss of considerable blood at short intervals, and the treatment lasts for almost, if not quite, as long a time a phototherapy. American patients on the Pacific coast are reluctant to submit to it, and I use it only in special cases for definite reasons. It is warmly advocated by Brocq,[1] who, trained in the San Louis Hospital, shows plainly in his therapeutics the influence of Vidal and Besnier. In lupus of the eyelids, lips and nose, where the individual is young and her calling is such that unsightly scars will take away her occupation, and she is so anxious to be healed that she will cheerfully endure the repeated infliction of pain, this is the method I prefer to use. It is also of definite value in assisting the Roentgen rays and fibrolysin injections in softening up hard dense cicatrices that are not keloidal.

CAUTERY.

The cautery method, in my opinion, is not to be commended in the treatment of lupus unless the area is very minute and the subject will not allow an excision. The electro cautery is preferable. A suitable cautery point should be selected, heated to a dull red glow and introduced into the nodules. The tissues should be roasted until not only the lupus tissue but a little of the sound skin is destroyed, for the electric cautery, unless its action be forced or repeated, acts very superficially.

The local remedies which have been proposed from time to time for the cure of lupus are legion. But few of them have any real value, and the apparent usefulness of many of them is based on the natural history of the malady and the credulity of their advocates.

Those which the experience of many people has demonstrated as of worth I will now refer to. These remedies may easily be obtained anywhere, do not necessitate great waste of time for the patient and require no great outlay of money by either physician or patient. They will effectually destroy nearly all of the superficial tuberculous patches. They are of great value in mapping out diseased areas before curetting or applying the Roentgen ray, and in the treatment of isolated nodules which may be left or which may appear from time to time in the scar or its neighborhood after curetting or radiotherapy.

SALICYLIC ACID WITH CREOSOTE.

The Biersdorf people in Hamburg make a plaster mull which contains 40 per cent. creosote and 20 per

cent. salicylic acid, which is the best method of applying these drugs in the treatment of lupus. Given a patch of lupus, no matter how extensive, ulcerated or non-ulcerated, the mode of application is the same. A pattern is made of the part to be covered and the mull cut of the same size and shape. Then many small snips are made in the plaster by folding it straight across and cutting it with the points of scissors. The protecting gauze is then removed and the plaster applied. There is no difficulty about it adhering, for it is very sticky. If the lupus patch is crusted or covered with scabs they should be softened and removed first. It acts only on the diseased portions of the skin and for a half hour or more after it is applied causes quite a severe smarting pain in the ulcerated parts.

The first plaster is allowed to remain in place for forty-eight hours, and by this time it has marked and mapped out the situation of all nodules lying near the surface of the skin, eaten well into many of the softer ones and broken the epithelial layers over the deep ones. Its action causes a secretion of an abundant sticky seropus, for the easy exit of which I cut the holes in the plaster before applying it; this dries into irritating gummy crusts and produces a dermatitis of the surrounding skin much like an eczema. The plaster is applied and removed once or twice daily for fourteen days, the secretion varying with the abundance of the ulceration, but it is frequently sufficient to nearly float the plaster out of place, particularly on the face of males, where it is raised by the growing beard. The pain is rather severe after each fresh application, but is rarely sufficient to require any narcotic.

The appearance of the patch is not unlike that of a piece of wood that has been bored or honeycombed by the teredo. The irregular-edged ulcers are covered by a whitish yellow slough, the necrotic process extending in soft lupus very deep into the skin. Where the plaster has destroyed the nodule entirely it is not uncommon to see it skin over and heal perfectly while the plaster is still in position. After the fourteenth day the plaster is omitted and a moist Thiersch dressing applied until the ulcers heal, which is usually in less than a week. If all of the nodules have not been destroyed by this first course another course may be immediately entered on after the removal of the moist dressing, and a third or even a fourth may be needed to effect a cure.

The following case illustrates the usefulness of this method. A healing being obtained in a most satisfactory manner ten years ago, I have only the photograph of the "after taking," the negative and prints of the original condition having been destroyed in a fire two years ago. The second photograph shows the same person at the present time, April, 1907, when the recurrent nodules are being conquered by the mitigated silver nitrate and liquor antimonii chloridi. The case in its history illustrates beautifully the usefulness of the plaster, of curettage as I advocate it, of cauterizations by silver nitrate and antimony and the complete failure of the Roentgen ray to cure or alleviate.

Case 3.—Mrs. J. B. O'M., aged 32, housewife, married, of good previous history, was referred to me by Dr. J. T. Stewart Feb. 8, 1897. About one year previously a tuberculous eruption appeared on the anterior part of the left leg and on the forehead. The nodules were small and partook more of the scrofulo-gummatous than of the lupoid type. This had been treated by local measures, chiefly protective, and antisyphilitic treatment internally without benefit. Plasters of salicylic acid, 20 per cent., and creasote, 40 per cent., were applied by me for fifteen days, after photographing. The ulcerated surfaces were allowed to heal under the boro-salicylic solution, and then the caustic plaster applied for fifteen days more. The photograph (Fig. 8) was taken at this period of the second course. The disease disappeared entirely, but there was a fresh outbreak in September of the same year on the left cheek. This was easily controlled by the same remedies. In 1898 she had a tuberculous ankle joint which was treated by excision of the diseased parts with perfect recovery of joint function. In 1900 she had tuberculosis of the left elbow which also was treated by curetting and the application of zinc chlorid solution, and speedily healed.

In April, 1904, she returned with ulcerating lupus of the face of the butterfly type. She was sent to a competent Roentgen-ray operator and for two months had exposures every two days with positive detriment. Later the 20 to 40 salicylic-creasote plaster was applied with great benefit, but some patches on the forehead, cheeks and lips persistently refused to improve beyond a certain point; they were curetted July 8, 1904, under local anesthesia. This resulted in a practical cure. She has been able to work at her occupation as a copyist ever since. New nodules appear from time to time and are treated by curetting or the application of the liquor antimonii chloridi, mitigated silver stick nitrate, or lactic acid. Her condition at the commencement of April, 1907, is seen in Figure 9.

SILVER NITRATE.

Small nodules may be cured and larger patches treated successfully by the mitigated stick of silver nitrate, whose affinity for and destructive influence on tuberculous tissue seems lately to have been lost sight of. A molded cone of silver nitrate carrying 10 per cent. of potassium hydroxid (caustic potash) sinks into a tubercle of the skin like a knife into a piece of soft cheese, and this is diagnostic, for it does it with no other tissue. It completely destroys all of the lupus tissue it can reach. For tiny nodules or small fistulas a fine silver probe heated in a flame and then placed for a second in contact with the silver nitrate stick melts a portion of it, which immediately fuses itself on the point of the probe. This may then gently be forced into the "lupoma," destroying it. The black crust requires no dressing so long as it remains dry, but if pus forms beneath, the eschar should be removed and a moist Thiersch dressing applied.

LACTIC ACID.

Larger ulcers which refuse to progress toward healing may be cocainized with a little of the powder or some 10 per cent. solution and then cauterized with some pure lactic acid dropped on dry cotton packed in the wound. The surrounding skin should be protected with some resin or other heavy cerate. After from ten to thirty minutes the cotton is removed and a Thiersch dressing applied. I have not found lactic acid as useful in the treatment of nodules of the skin as it is in those of mucous membranes, where it has become my agent of first choice.

Silver lactate has the destructive and selective properties of lactic acid and silver in the treatment of tuberculous ulcerations of the skin. I employ it in the form of a 20 per cent. ointment made with simple cerate. This is worked into the meshes of strips of gauze by the hands covered by rubber gloves and used to pack the ulcers.

I have experimented with this agent considerably. It is well worthy of recognition in the treatment of ulcerative scrofuloderma and lupus. Its drawback is the dirty stain it produces on the skin of the patient and often that of the surgeon, for the lactate, like the nitrate of silver, is decomposed by light rays.

ANTIMONY.

Antimony in the form of liquor antimonii chloridi is a most dependable agent for destroying small lupoma. I modify Unna's method of application. Beechwood toothpicks are dipped into the solution and then inserted in the nodules, which is easy of accomplishment without undue force. They are allowed to remain in position for about ten minutes, even removed and replaced by others if the nodules are deep.

Unna then cuts them off, leaving the points in the skin to slough out. This I do not regard as necessary, but remove them after I think the part is sufficiently acted on by the drug and apply a moist Thiersch dressing, if the cauterized points are multiple or were the previous seat of suppuration.

PYROGALLIC ACID.

There are times when the salicylic-creasote plaster is useless or the sick person objects to its odor. Recourse may then be had to a salve or paste of pyrogallic acid, which also has selective action on the diseased tissues. It is best used as a 50 per cent. paste and, as it acts better in the presence of calomel, I add 10 per cent. by weight of this drug and enough terra silesia to the excipients—vaselin and lanolin—to make a flexible paste. This is spread on linen cloths cut to fit the diseased part, and these cloths should be covered with gutta percha tissue as a protective. The paste is applied in cycles in from five to fifteen days and renewed once or twice a day. Each time it is renewed the ulcer should be cleaned gently with gauze or cotton and as much of the resulting brownish yellow slough picked or cut away as is possible without irritation. The paste should not be omitted until it ceased to have a cauterant effect. After its removal a moist Thiersch dressing usually will be found to be the most satisfactory treatment.

As a résumé of my experience and observation in the treatment of lupus I believe that while the Roentgen ray is, in the hands of a skilful operator, the most effective agent, all the patients can be cured within a reasonable time without it. That success follows persistence on the part of the medical attendant and patience with faith in ultimate recovery on the part of the subject.

COMBINED TREATMENT.

The combined or mixed treatment consists of the preliminary preparation of the field of operation by agents that lay bare the lupoma. Then the ulcerative surfaces are sterilized by the electro cautery and this is followed by ablation or curettage, thorough but not mutilating, with broad sharp curettes, followed by smaller and finer instruments of the same nature. This is followed by a second sterilization of the field of operation by alcohol and hot solutions of corrosive sublimate, and the subsequent chemical cauterization by a careful application of a 50 per cent. solution of the zinc chlorid to the curetted surfaces. The wound is then treated by moist dressings of boro-salicylic acid, which acts as antiseptic and keratolytic, until the healing of the ulcers. Careful searchings day after day for residual nodules in the scar, which, if found, are destroyed by the mitigated stick of silver nitrate, lactic acid or liquor antimonii, will effect an apparent and usually a real cure of the majority of cases of the disease within a period of three months, with a cicatrix that is not deformative.

About the eyelids, lips and nose, where the only consideration is to obtain healing with a minimum cicatrix, multiple linear scarification gives best results. Where the lesions are superficial the best treatment is the strong

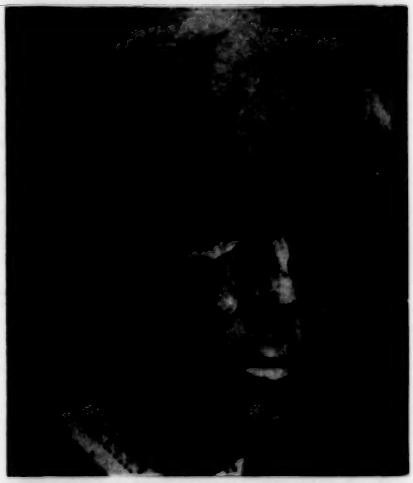

Fig. 1.—Excision of tissues about the canthus and of the right lower eyelid (one-half) for cancer developed on a patch of lupus; defect replaced by flap-sliding; nose treated by curettement and zinc chlorid solution; chin treated with arsenic paste. Photograph unretouched.

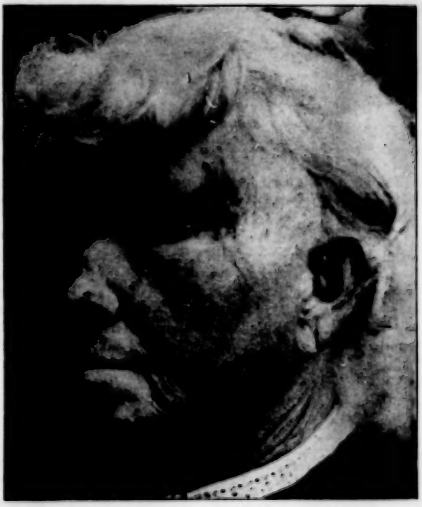

Fig. 2.—Same subject as Fig. 1. Removal of large portion of orbital plate of frontal bone and entire outer and superior orbital plate of malar bone, together with the affected skin; healing by granulation. Photograph unretouched.

salicylic acid creasote mull or pyrogallic acid paste, with calomel repeatedly applied in several cycles of fourteen days each.

Lupus and various tuberculous lesions of the skin are not rare in the state in which I live, as it has become a haven of refuge for the tuberculous. Strange to say, in Southern California I have seen more cases develop between the third and eighth decades of life than in the very young.

HELIOTHERAPY.

There is another treatment to which attention should be called. This may or may not be original with me.

Fig. 3.—Patch of skin and deeper tissues removed from back of woman. Non-ulcerative lupus. Size, 9 cm. by 9 cm. by 6 cm.

Fig. 4.—Prince Morrow curette.

Fig. 5.—Beanier curettes.

Fig. 6.—Volkman curette.

Fig. 7.—MacGowan curette.

I do not recall ever having read of any one using it, but I have not read everything and there is very little new.

For a number of years I have at times made use of a kind of heliotherapy in the treatment of sluggish wounds and tuberculous lesions of the skin. This consists of directing the concentrated rays of the sun on large wounds or large lupus patches with large lenses of broad focal distance, and on smaller areas with smaller lenses of lesser focal distance. The effect sought has been double: First, to obtain the stimulation from a kind of exaggerated sunshine on sluggish granulations, and, second, to obtain the destructive effects following the accurate focusing of the rays on definitely diseased tissues.

At first I had great difficulty in obtaining the consent of patients to submit themselves to the cautery effect of the sun rays, as they feared destructive burns and subsequent suffering; but now my assurance that the pain will pass with the treatment and that frequent repetition of the procedure is not necessary usually gains the consent of the subject readily. The treatment is carried out as follows: The subject sits or lies facing the sun. The operator stands or sits in such a position that he can throw the sun rays through the lens directly on the diseased tissues and change the focus of the instrument at will and at the same time observe the tissues which are being treated. The eyes of the operator should be protected with dark glasses, for the effect of gazing steadily at the concentrated light as it moves about the patch is blinding unless the eyes be covered. All of the neighboring parts should be protected with lead foil as is done in prolonged Roentgen ray exposures. The patch of lupus alone is exposed. The lens then is so held that the rays while concentrated are not accurately focused on the diseased structures, and the lens is moved so that the light rays of "exaggerated" sunshine move around and around the diseased area for from five to fifteen minutes, an occasional short rest being taken to relieve the operator's hand and accustom the patient to the treatment. The rays then are focused accurately on some point in the patch and the lens slowly moved, the focal distance being kept the same, over the whole lupus area. The pain at the time is quite severe but bearable. The tissues first redden, the individual blood vessels become engorged and expand, grow rapidly edematous, rise above the surrounding tissues and take on a yellowish brown and then an opalescent tinge. This is the time to cease. In twenty-four hours the cauterized tissues dry into a yellowish crust, which remains in position for a week or

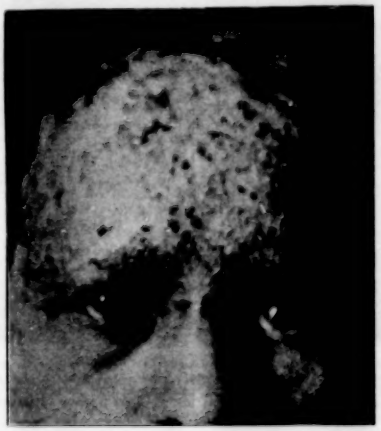

Fig. 8.—Case 3; taken in 1897 after fifteen days' application of Unna's 20 to 40 salicylic-creosote plaster mull. Photograph untouched.

two before it drops off, leaving a smooth but slightly depressed and undeformative scar. Any point that escaped may be put to the test for tuberculous nests and submitted to a second treatment. The following case illustrates the value of this treatment:

Case 4.—Mrs. B. A. G., married, aged 34, came to me April 12, 1905, with lupus of the upper part of the bridge of the nose, extending out on the cheek on each side, the patches having approximately the same size and shape as shown in Figure 10. There was also one patch in the center of the right side of the forehead, one small one over the left eyebrow, one within the concha of the right ear, and one on the right cheek over the malar prominence. There was a previous history of

tuberculosis of the lungs active ten years ago but cured at the time of consultation. The foci were first treated with the 20 to 40 plaster mull of salicylic acid and creasote and subsequently with antimony chlorid and other caustics. There was much betterment but no cure of the larger patches on the nose, but an apparent cure of the smaller patches in the ear, on the forehead and on the cheek.

Treatment by the lenses and sun rays was commenced June 1, 1906, and one patch was treated at a time at irregular intervals until Sept. 25, 1906, with practically perfect results. No other treatment nor application was made. The character of the scars is shown in the accompanying photograph (Fig. 11). They are not deformative.

422 Merchants' Trust Building.

DISCUSSION

ON PAPERS OF DRS. KASSABIAN, BOGGS AND MAC GOWAN.

DR. M. B. HARTZELL, Philadelphia, said that we should not lose sight of the fact that patients with lupus were cured before the introduction of the Roentgen rays and the Finsen light. He said that he had listened in vain to hear some one say something about the untoward effects that sometimes result from the Roentgen rays, and with which we are all more or less familiar. He spoke particularly of the marked atrophy of the skin which not infrequently follows the Roentgen ray treatment, and mentioned the case of a young woman who was treated by this method for a disfiguring form of acne; the treatment proved satisfactory, so far as the disappearance of the acne was concerned, but it left her with the seamed and wrinkled face of a woman of 75. Among the cases of eczema that are most successfully treated by this method are those in which patches occur on the backs of the hands. In these cases he has often seen marvelous results.

DR. G. E. PFAHLER, Philadelphia, said that the papers of Drs. MacGowan and Kassabian impressed on him the fact that in the treatment of these various affections a single remedial agent can not be depended on. One man, with the proper technic and equipment, will get marvelous results from one agent, while another man with the same agent, but improperly equipped, will get poor results or none at all. Dr. Pfahler agreed with Dr. Hartzell that the Roentgen rays may prove harmful, and that they should never be used in cases in which another remedial agent will accomplish the same result. He believes that we are prone to use the *x*-ray too frequently and with too strong a dosage, especially in skin diseases. Nature should be allowed a little more time after the lesions have been sufficiently stimulated. Perhaps the ideal treatment would be to give a single dose, and then await its effects. For the past year he has been trying to perfect the technic for the removal of superfluous hair, and he agreed with Dr. Schamberg that physicians should hesitate in treating these patients with the *x*-ray. In the cases in which he has undertaken it, he has done so under protest. By an exposure of thirty seconds he has been able experimentally to remove hairs without doing any damage to the skin. With this technic, which is not yet completed, the hairs have been removed, but not permanently, and he mentions it as an example of what may possibly be done with the *x*-rays with good technic.

Fig. 9.—Case 3, showing condition of forehead and face with recurrent lupomes of the upper lip, April, 1907. Photograph unretouched.

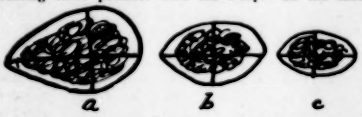

Fig. 10.—Case 4, showing approximate size and shape of patches of lupus; *a*, right side of nose; *b*, left side of nose; *c*, top of nose.

Fig. 11.—Case 4, showing character of scars on nose, cheeks and forehead following treatment of lupus by heliotherapy with lenses. Photograph unretouched.

DR. CHARLES LEONARD, Philadelphia, said that he indorses what Dr. Kassabian said in regard to the injurious effects of meddlesome treatment—both medical and surgical—in dealing with an *x*-ray dermatitis. All meddlesome medication should be avoided by anyone who comes in contact with these lesions. The lesions are the result of injury to the trophic nerves, and the vitality of the tissues is much impaired. He has known of many instances in which these lesions were excised in spite of the fact that the surrounding tissues were so much impaired in vitality that it was impossible to expect either

healthy granulations or any reparative process. Such treatment simply aggravates the condition; the same is true of the application of irritant ointments. In Philadelphia physicians have learned to let Nature take its course in the care of these ulcers, simply limiting themselves to proper asepsis, and mild stimulation by the use of hot water baths, and application of ointments of the mildest character, such as lanolin and petrolatum in equal parts, with 5 per cent. of zinc oxid. Under this treatment, the chronic ulcers will heal, and the malignant transformation which is said to be so common, is prevented because all sources of chronic irritation are removed, and the devitalized tissues are allowed to regain their normal vitality, which is essential to reparative processes. In the treatment of lupus, particularly that effecting the nose, Dr. Leonard has seen excellent results following the *x*-ray treatment, with scarcely a perceptible scar. As the papers have shown, successful treatment is dependent on accurate powerful treatment adapted to the needs of the tissues and lesions involved. Failures are certain to result in the hands of those deficient in technic and timid because they are ignorant. This is true of all medication, as has been clearly demonstrated by Dr. MacGowan's paper.

DR. JAY F. SCHAMBERG, Philadelphia, said that he is in general accord with the statements made in the papers under discussion. The Roentgen rays, properly applied, form an important addition to our therapeutic armamentarium. At the same time physicians are less enthusiastic in their claims concerning the results of the *x*-ray treatment in dermatology than they were some few years ago. The *x*-rays are of decided value in acne, but the method should be used in conjunction with other approved measures. Dr. Schamberg has found the treatment more efficacious in the deep pustular varieties than in the mild superficial papular types. In eczema his best results have been obtained in the recurrent vesicular type involving the hands and feet—those rebellious varieties which recur month after month and year after year, and which are comparatively little influenced by other methods of treatment. In the treatment of superficial diseases of the skin, the older methods of treatment found to be of value should be employed and the *x*-rays used as an adjunct and auxiliary in as small degree as possible. By thus employing the minimum quantity of *x*-rays to assist in effecting a cure, much greater security is assured against producing undesired structuarl change in the skin.

DR. R. H. MONTGOMERY, Youngstown, Ohio, said that he has never seen any untoward effects from the use of the ray, in spite of the fact that for a number of years he employed them in a comparatively reckless manner. He recalled particularly one enormous epithelioma of the face which he succeeded in curing after the patient had been given up by the surgeons, and at that time he knew little about the proper dosage and technic. He has also used the remedy in acne and lupus vulgaris, with comparatively good results, and so far as he knows, no malpractice suit has ever been brought against him.

DR. GRANVILLE MACGOWAN, Los Angeles, said that he does not know why an old man's skin should not heal in the same way as a young man's. He has operated on many patients over 80, and they recovered after serious surgical operations. The trouble with many surgeons in dealing with epithelioma is that they are a little timid, fearing to remove much tissue lest it should leave a bad scar on the face, which might be regarded in the community as a reflection on their skill. In his paper he said that there is nothing he could recommend that is new, but there is one method of treatment which he forgot to mention, and which may be new to some; he has frequently resorted to it in the treatment of lupus about the face or hands, with excellent results—that is, the application of the direct rays of the sun. He has seen astonishing results in general tuberculosis from the simple application of the sun's rays as God gives them right out of the clear sky; in California this treatment is possible over 300 days in a year, and it occurred to him that perhaps these rays, if they were concentrated on a small lupoid lesion, would prove beneficial. To make these applications, he employed a small lens for small lesions, and a large lens for large lesions. The operator is placed between the patient and the sun, and with the lens concentrates the rays on the lesion for a period of eight or ten minutes. The treatment is painful, it hurts decidedly, and even a preliminary injection of cocain does not entirely do away with the pain. Under the influence of these strong rays of sunlight the tissues undergo much the same change that we see after the application of arsenical paste. They first become brownish-yellow and then assume a peculiar purplish tint. Within twenty-four hours they dry up into a crust like that observed on old eczematous patches; this falls off in the course of ten days, leaving a perfectly smooth flexible scar.

DR. M. K. KASSABIAN, Philadelphia, said that about one-half of the *x*-rays are absorbed in the epidermis and about one-tenth in the derma. He is sorry that he can not agree with Dr MacGowan that we can use sunlight in this type of cases, and he believes that when penetration is necessary, we must resort to the *x*-rays.

DR. RUSSELL H. BOGGS, Pittsburg, emphasized the importance of the word "conservative." This means that *x*-ray men should not only be conservative, but that physicians who know nothing whatever about the Roentgen rays must not judge good work by a few patients who have not been properly treated. Every year we hear less and less of the enthusiastic *x*-ray men, and instead of that we hear more of the conservative use of the *x*-rays.

TWO SEBORRHEIDS OF THE FACE.

I. ACNE RUBRA SEBORRHEICA. II. PITYRIASIFORM SEBORRHEID OF THE FACE.

M. F. ENGMAN, M.D., AND W. H. MOOK, M.D.
ST. LOUIS.

ACNE RUBRA SEBORRHEICA.

At the third International Congress of Dermatology and Syphilography, Petrini described two cases of a disease of the skin of the face in middle-aged women, which appeared in the form of small red papules, especially about the nose. He recognized from the color and clinical features of this affection that it was a distinct and characteristic condition. To this affection he applied the term acne rubra seborrheica. In 1903 Pringle undoubtedly described the same condition in an article[1] to which he gave the title, "A Rare Seborrheid of the Face." Since that time we have carefully watched the literature for further contributions on this condition, but after a rather thorough search no further data could be obtained. One of us had for years been in the habit of classing the affection above named under the term "seborrheic acne."

It seems strange that more attention has not been called to this not infrequent condition, as it is distinct and not easily confused with any other of the skin. On close examination one can readily see that it has not the appearance of an acne vulgaris or simplex, and its therapeutic handling renders it in itself distinct from those affections. Pringle reports only one case, and mentions several others in his contribution, but seems to have confused its etiologic features.

Acne rubra seborrheica, as the title indicates, always occurs in seborrheic individuals, and when we speak of seborrhea we mean the seborrhea oleosa of the older writers, characterized by oiliness of the skin, especially through the center of the face, thickening of the skin in many instances, more or less dilatation of the follicles,

* Read in the Section on Cutaneous Medicine and Surgery of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

1. British Jour. of Dermatol., February, 1903.

and possibly here and there some small scaly patches; and there may be associated with this seborrheic groundwork a few comedones with their subsequent acne. Acne rubra seborrheica is, therefore, a disease which may occur any time after puberty.

The disease begins as a small, follicular papule of a rose-red tint, varying in size from a pin point to a lesion as large as a split pea. The lesion is more or less convex, sometimes capped by a small scale, which is closely adherent, and in the very earliest stage in the formation of this scale there may be seen a minute pustule, which quickly dries into a crust. As evolution progresses the desiccation extends from the summit to the base of the papule. The papule gradually flattens and remains in this desiccating condition for some time. Several of these lesions may coalesce to form small patches, but this is, in our opinion, unusual, as one of the distinct characteristics of the disease is the disseminated distribution of the eruption.

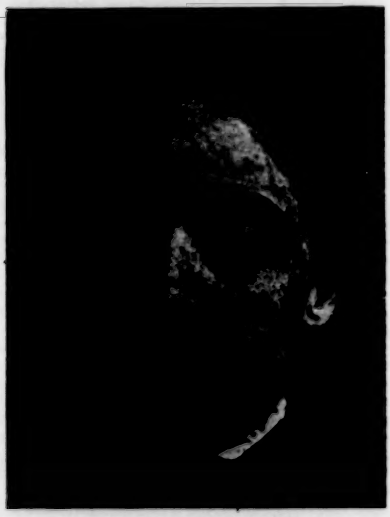

Fig. 1.—Acne rubra seborrheica.

Here and there is sometimes slight grouping, but it is not a conspicuous feature. In the majority of cases these lesions are irregularly scattered about the base of the nose, near the naso-labial furrow, about the chin and on the forehead. The nose itself is not so frequently affected as its immediate neighborhood. Where the disease has existed for a long period it is widely scattered over the face and neck. As yet we have seen no lesions of this type on the chest or shoulders. On account of the rose-red color of the lesions, when taken in their ensemble, and when closely placed together, they give the appearance of flushing, almost of a rosaceous condition. Especially is this true when the patient enters a warm room or blushes, and it is a fact that in all of these cases, without a single exception, a blush is easily caused, rendering the lesions, therefore, more congested and conspicuous.

The disease, without proper treatment, does not undergo involution, as some of our cases have existed ten and twenty years, and have been treated in many instances, possibly, for acne vulgaris. Although the condition does not as a whole undergo involution, yet here and there, where it has existed for long periods, sites of former lesions are easily recognized by a slight pigmentation, and when the face becomes congested by blushing or exertion these foci are easily discernible.

Not infrequently there is a complication of some other seborrheid. Petrini refers to a probable seborrheic condition of the lips and mucous membrane in one of his cases. Seborrheic eczema of the scalp is, of course, most frequently associated. In several of our cases there have been some slight desquamative changes of the lips, and

Fig. 2.—Acne rubra seborrheica.

in one case a lesion of the tongue, which was also probably of the same origin. The seborrheic eczema of Unna —with the exception of the condition of the scalp above referred to—we have never seen associated with this affection. When the disease has existed for a long period, the time, of course, varying as to the individual, minute telangiectases are formed on and immediately around many of the lesions in the form of thread-like vessels, and every lesion has a more dusky and rosaceous appearance. We may safely assert that the longer the disease has existed the more dusky the rosaceous is its appearance. This telangiectatic condition occurs most frequently in the center or seborrheic areas of the face and does not exist on the sides of the cheeks. Subjectively the patient will notice possibly a slight amount of itching, and when the disease is widely disseminated and has existed for some length of time there is a decided tingling and burning, which is markedly accentuated on exer-

tion or by anything that will cause an increase of the congestion of the face. This seems to annoy the patient in many instances, and, with those in the lower walks of life, is the principal cause of their visit to the physician.

Acne rubra seborrheica always begins with the formation of a few papules, occurring on the chin and around the nose, and when it is widely distributed one can feel sure that it has existed for some years, as the disease extends very slowly. It does not appear in crops or acutely, but by gradual and slow extension of the process. Irritating applications, possibly soaps and various lotions, which the patient generally uses in the home treatment of this affection, no doubt add to the rapidity of its spread.

Acne rubra seborrheica is to be differentiated principally from: 1, A small papular syphilide; 2, acne vulgaris; 3, acne rosacea; 4, pustular folliculitis; 5, acne agminata (Crocker); 6, acne varioliformis; 7, adenoma sebaceum. The diagnosis is easily made when one bears in mind the following salient features: The seborrheic base, associated in most instances with seborrhea of the scalp; papules of various sizes, ranging from a pin point to a split pea; superficial, convex papule, capped by a slight scale or covered with fine desquamation, containing no comedo or pus; dissemination being characteristic feature, grouping a question of accident; location in the seborrheic areas of the face; duration; subjective symptoms; tendency to flushing; often small telangiectases; no pitting or scarring; and, above all, a dry, non-suppurative superficial desiccating papule. These points are certainly sufficient to differentiate this papule from that of any of the above-named affections, without the therapeutic test, which is a final and positive differential point and will be spoken of later.

Petrini, in his original communication, classed this papule among the seborrheids for the reasons above given, viz., its association with other seborrheic conditions. Pringle, who has written most clearly on this subject and adds to his article a colored plate, says that his case was labeled seborrheic eczema, but it was finally brought to the dermatologic society as a case for diagnosis; as it presented about the same condition as that described by us, although the eruption was more widely distributed than those usually seen, and it had more of the rosaceous element about it, it was undoubtedly an extreme type of this affection. Pringle also speaks in his article of a similar case described by Dr. Colcott Fox and one by Dr. Galloway. Dr. Fox's case contained no telangiectases, due probably to its short duration. Dr. Galloway's case had a great deal of general erythema and contained numerous small telangiectases, and, on first glance, had some resemblance to adenoma sebaceum, but on more careful examination it proved to be an entirely different affection.

It seems odd to us that this affection has not been previously brought to the general notice of the profession, and strange that more cases have not been reported. Our statistics show, from the St. Louis Skin and Cancer Hospital, and our private practices, 40 cases out of 1,000 cases of skin affections; from our clinic in the Skin and Cancer Hospital we have recorded 19 cases out of 500 cases of skin diseases; in private practice 64 out of 1,000 cases of skin diseases. All of the cases included in these statistics have undergone the therapeutic test and presented the characteristics of this affection above enumerated.

On account of the location of this disease it has not been possible for us to obtain material for microscopic study. In lieu of that we will take the liberty of quoting the report of a histologic examination by Dr. Graham Little, given in Dr. Pringle's article above mentioned:

Examination with low power (No. 3 Leitz): The small elevations corresponding to the papules are seen to center round a pilo-sebaceous follicle. The follicular orifice is not especially large or dilated, and there are no plugs as in acne. The hair in the follicle is not coiled on itself, or abnormal in any way. The horny layer is normal; there is no acanthosis. The only pathologic features noticeable are as follows: Around the hair follicle throughout its extent, but more especially in its deeper parts, there is an extensive infiltration of cells. In the case of the larger papules this mantle of cells exceeds two or three times the diameter of the cross-section of the follicle, as measured with a micrometer eyepiece; in the smaller papules the sheath of cells surrounding the follicle may consist of only a few layers of cells, but the hair-follicles, almost without exception, seem to have this surrounding envelope of cells. The collagenous bundles are displaced by these collections of cells and wall them in. The sebaceous glands appear in many cases abnormally large, but this enlargement is in no way comparable to that seen in sebaceous adenoma. The blood vessels appear normal and there is no other tissue change to note.

Examination with high power (1/12 oil immersion, No. 4 eyepiece, Leitz): The collections of cells round the pilo-sebaceous follicles consist of mononuclear and polynuclear leucocytes, with some connective-tissue corpuscles. There are no plasma cells or mast cells. The most careful examination for micro-organisms gave a negative result.

We have attempted a bacteriologic investigation of the papules and scales, but our findings are possibly of no value, as we could only demonstrate the organisms normally found on the seborrheic skin, viz., the flaschen bacillus of Unna, the polymorphic coccus (white coccus) of Cedercrentz, and Sabouraud's microbacillus of seborrhea. Whether we are to follow, in reasoning out the etiology of this disease, the dictum laid down by Sabouraud, namely, using his microbacillus of seborrhea as a pioneer, or not, is a matter of taste. The organisms mentioned are found in the normal skin, and it seems to us it is going rather far to state, dogmatically, that a certain bacillus, normally found in the skin, paves the way for secondary infection by other organisms also normally found in the skin. Therefore, we will pass this matter over by saying that the affection which we are attempting to describe should possibly be classed, for the present at least, with the seborrheids, as it is closely associated with other seborrheic symptoms.

We do not believe that internal conditions, as far as the papule is concerned, have anything to do with its etiology. Flushing of the face, so characteristic in long-standing cases of this disease, is, in our opinion, secondary to the skin involvement, and is due solely to inflammatory changes produced by some infection, extending over long periods of time in a seborrheic skin. All of our cases presenting marked flushing and congestion have recovered by local treatment alone; therefore, we do not believe that there is any connection at all between this condition and the alimentary tract. Of course we are not now discussing the probable underlying seborrheic factor, whatever its cause may be.

The treatment of acne rubra seborrheica may be summed up in four words—salicylic acid and sulphur. All patients will recover in from two weeks to two months, no matter how severe, if properly treated with these drugs. In using sulphur and salicylic acid in this, as in other affections, we must begin with a weaker strength in an ointment base and gradually increase the

strength, commensurate with the slightest amount of irritation of the normal skin of the patient. The stronger the preparation of salicylic acid and sulphur the quicker will be the recovery, provided one does not irritate too markedly the normal skin and produce a dermatitis.

Many of the patients appear for treatment after they have used various irritating and ineffectual applications, and we may find more or less of a dermatitis, which might probably mask the real condition. If acne rubra seborrheica is suspected soothing applications should be used until the latter affection becomes plainly evident, when mild applications of sulphur and salicylic acid can be ordered. Our usual procedure, where no dermatitis accompanies the disease, is to begin with 20 grains of sulphur precipitate and 5 grains of salicylic acid to the ounce of cold cream. This is gradually increased and continued until the disappearance of the disease. No matter how mild the strength of the sulphur and salicylic acid, the patient will complain of its burning during the first applications.

If there is marked tendency to flushing and congestion, which occurs in the older cases, the internal administration of ichthyol and strychnin assists in the control of the vessels. Often mild applications of the Roentgen ray will hasten the disappearance of the lesions, and we believe it also assists in quieting the vessels to their proper tone.

After the patient has recovered from the papular elements of the disease the underlying seborrhea should be treated to prevent its recurrence, and the patients should be instructed to continue the treatment of the seborrhea in a routine manner and add it to the routine of their toilet, as they do their tooth powder or manicure set. For this purpose we generally use a solution of 1 per cent. of salicylic acid with 3 per cent. or boric acid in some spirit. Accompanying this we often order the following powder, which is lightly rubbed over the face, after it has been thoroughly mopped with the abovementioned solution: Acid boric, sulphur precipitate, zinc oxid, pulv., calamin prep., equal parts. Such a routine procedure, when properly carried out, will almost always insure the patient against a relapse, and will markedly improve the oily seborrhea. The scalp in every instance should be treated in the manner usually employed for such cases.

PITYRIASIFORM SEBORRHEID OF THE FACE.

We will mention only in outline another condition of the face, which is in our experience rather frequent,, and we believe should also be included with the so-called seborrheids, as it is in every instance associated with a seborrheic condition of the scalp. It is most frequent in those with fine, delicate skins, occurring, therefore, especially among women and children, and more frequently in blondes. We see more cases in the winter months, and in those who have been recently exposed to sharp winds, being markedly frequent in women after automobiling.

This disease occurs in the form of one or more scaly patches, scattered over the front of the face and sides of the neck. The patches are irregular in shape, ranging in size from the most minute point to an area often occupying more or less a quarter of the face surface; the usual size, however, corresponds to that of a small coin. There are very few, if any, inflammatory symptoms, and the patch can only be seen in many instances on close inspection. It is covered by fine, closely adherent scales, giving it an appearance of a branny, desquamative character. The edges are irregular in outline and the patches spread peripherally. Often the patches are distinctly circular and are mistaken by the patient for ringworm. When circular they have more of an inflammatory character and the edges are of a distinctly pale pink. In the center of these patches the scales are adherent, and there is a yellowish, reduced, parchment appearance to the whole area. The patient will state that these patches are prone to recur and are aggravated by the slightest irritation.

We have never seen this condition except on the face and neck, never on the hands or on the covered portions of the body. Crocker refers to a similar condition and speaks of it as produced by soaps. Sabouraud refers also to furfuraceous patches similar in character, complicating streptococcic impetigo, and says they are also due to that organism. From a close study of these cases we feel assured that they have a direct connection with the so-called seborrheic element, and are most probably due to autoinfection from the scalp, occurring in those with dry, delicate skins, the exciting agents probably being cold winds, irritating soaps, harsh water, violent friction to the face, and other traumata, followed by infection.

We feel encouraged in making this statement when, on looking over our records, we find that antiseborrheic treatment is the most valuable curative agent, though this has to be used in as strong doses as possible. Often reducing agents will have to be pushed to marked exfoliation of the epidermis before the patches are eradicated. It seems to us that chemical and mechanical agents, such as soaps, etc., are only the exciting factors, and that this condition must be due to some living agent following such trauma, as it does not undergo involution, but spreads peripherally, as other infectious processes. It is only eradicated by the proper antiparasitic agents, which often have to be pushed to marked irritation of the normal skin and followed by soothing applications before a beneficial result is obtained. To prevent recurrences the scalp conditions should be most thoroughly treated, and it is only by this method that repeated attacks can be controlled.

These pityriasiform patches must not be confused with the usual seborrheic eczema with their yellow, greasy scales, or other acutely inflammatory conditions, because we have in this instance a furfuraceous patch, extremely superficial, circumscribed, with the slightest possible evidences of inflammation, slightly itchy, rather rebellious to treatment, sensitive to the slightest irritation, without vesiculation or crust formation.

DISCUSSION.

DR. JOSEPH ZEISLER, Chicago, stated that he admired the classical observations in this paper, but questioned whether it is opportune to overload our dermatologic nomenclature still further. In the one form of acne described we have simply a symbiosis of acne with seborrhea; in the second variety we have those familiar cases which were usually described under the term of eczema squamosum.

DR. JAY F. SCHAMBERG, Philadelphia, said that for some years past he has seen, particularly during the spring months of the year, a considerable number of children with sharply defined, furfuraceous patches on the cheek, which were recorded as cases of eczema squamosum. He has long been suspicious, however, that they are of a seborrheic nature. The condition usually develops in March or April; he has observed as high as 10 per cent. of the pupils in certain classes of certain schools to be affected with patches of this kind. Whether the affection is the result of the harsh winds that usually prevail at this particular season, or whether it is transmitted from one child to another is a question which

he is unable to answer. It is, he said, very difficult to speak concretely on the subject of seborrheids, as we have not a very clear comprehension of what seborrheids really are, nor are we in accord as to the etiologic factors that have been described in connection with seborrheic processes. Some years ago he examined the skin of fifty patients who came to the dermatologic clinic, for various reasons, and in 45 per cent. of these cases, the sebaceous glands contained the microbacillus of Sabouraud. Whether this organism bears any special pathogenic relationship to the class of eruptions under discussion future investigation must determine. It has not been positively proved that the microbacillus is not a normal inhabitant of the sebaceous glands, although Sabouraud certainly makes out a strong case for its pathogenicity in relation to oily seborrhea.

DR. W. H. MOOK, St. Louis, said, in regard to the pityriasic affections of the face and neck which are embraced under the second heading, he would insist that this is certainly a distinct condition from eczema, and should be so regarded. The idea of his classification of this form of acne is to distinguish it from the other forms, as it is, in his opinion, a distinct entity.

THE TECHNIC OF OPERATIONS FOR CARCINOMA OF THE BREAST.*

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The chief object of operation for cancer of the breast is, of course, the cure of the cancer. This is as it should be, but it is also important that the convalescence of the patient be as comfortable and as rapid as possible, and that the resulting disability be as slight as consistent with radical removal of the growth. It is especially with a view of aiding somewhat in the accomplishment of the last-named objects that this paper is written. The chief basis of the paper—aside from a study of the literature—is my personal experience in this line of work, something over fifty cases of radical removal.

SUPERFICIAL INCISION.

This must be varied often to suit the case in hand, but the skin forming the floor of the axillary space should not be incised except in cases wherein the removal of a portion of it is necessary. There are two reasons why it is desirable to avoid incising the skin in this area: First, because infection is more likely to follow incisions made in this area, and, second, because the resulting scar is likely to interfere with the movement of the arm.

Figure 1 illustrates these points. There was a slight infection of the wound in the apex which increased the amount of scar tissue and exaggerated the bridle which interferes with the upward movement of the arm. Incisions so made as to form flaps with acute angles are objectionable, because they are difficult to coapt and are prone to slough on comparatively slight provocation. Rectangular incisions for removal of the breast, as compared with circular or elliptical incisions, are wasteful of tissue. The incision which I think the best, and one which is adapted to most cases, is one commencing at the humeral insertion of the pectoralis major muscle and following its lower border until the breast is reached, then surrounding the gland in a somewhat elliptical fashion so that when coapted the line of coaptation will occupy about the position occupied by the lower border of the normal pectoral muscle, save that it extends farther inward and downward. This incision gives ample room for the clearing of the axilla and the removal of the pectorals, and leaves a minimum scar, which may be fixed well up in front of the joint, where it will be least likely to interfere with abduction of the arm.

Figure 2 shows the result after an incision of the kind described. As stated above, the lines of the incision must of necessity be changed sometimes to meet the requirements of the case at hand, but the principle of so planning the incisions as to allow of coaptation with a minimum amount of tension made in a vertical direction, especially in the outer aspect of the wound, must be adhered to as nearly as is consistent with complete removal, if the best results are to be attained, so far as concerns the movement of the shoulder.

PART TO BE REMOVED AND METHOD OF REMOVAL.

All of the pectoralis major muscle, except the clavicular portion, and the abdominal portion when present, should be removed, together with the whole of the pectoralis minor, the axillary fat and glands, and the breast, with its coverings.

The pectoral insertions are most quickly and safely divided by scissors, using the finger as a guide. The cleaning of the axillary space should be from above downward and from without inward. The larger part of this dissection can be most satisfactorily done by wiping the fat and gland away from the vessels. I owe my knowledge of this gauze dissection to Dr. A. J. Ochsner, and regard it as an important improvement in the technic. By ligating the vessels near the main trunks, as advised by Jackson, the field may be kept free from blood and the work much expedited. Clamps are placed, when necessary, on the distal ends of the vessels. As the mammary gland is lifted from the chest wall the perforating arteries may be caught with forceps before they are divided.

Fig. 1.—Showing scar tissue in axillary space interfering with upward movement of arm.

CLOSING AND DRESSING THE WOUND.

The rapidity and completeness of the patient's recovery, as well as her comfort, depends, in a large measure, on the way the wound is closed and dressed. The most perfect wound treatment is that which reduces to the minimum the scar tissue, and disposes that which is unavoidable in such manner as not to interfere with function. With this object in view the wound should be completely closed and no drainage used. In a very few cases, indeed, will it be impossible to secure com-

* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

V 4
190

plete coaptation of the margins of the wound, and in still fewer will drainage be necessary.

Hemostasis must be practically perfect. In accomplishing this, the use of hot compresses is invaluable. These are applied to oozing surfaces while the larger vessels are being tied or twisted and the wound is being closed. Not only does the heat assist in preventing the bleeding, but it is of material value in preventing the untoward results, pneumonia, shock, etc., which may follow the exposure of so large a raw surface to cold. I have already said that in all but a very few cases complete coaptation of the margins of the wound can be secured. In six patients operated on in Hope Hospital since October, 1905, complete closure of the wound has been secured in all. In order to do this, the skin must be drawn taut over a larger or smaller area, but the skin will stand much more tension without breaking down than most operators seem to think. In most of these cases in which the wound is completely closed, the skin will

Fig. 2.—Showing scar following incision recommended by author.

have to be stretched until it is white, but by placing tension sutures properly, and in sufficient number so as to distribute the tension as evenly as possible, no harm will come from the tension, and the wound will heal by first intention within a week. For tension sutures I prefer silk-worm gut and buttons. The buttons have a tendency to produce pressure necrosis if the tension is great, but this can be so nearly overcome, by placing under the buttons a little gauze, that it amounts to but very slight annoyance at most.

Figure 3 is from a photograph, taken before operation, of a case of recurrent adenocarcinoma of the left breast. One can see from the picture how extensive a removal of the skin must have been necessary in this case, and yet, following the method described, complete closure of the wound was secured and the wound was found to be completely healed when the dressing was changed on the seventh day after the operation.

Figure 4 is from a photograph of this patient taken seven days after operation; the wound is healed, and the hand can be placed on the head. Equally good results, as to wound closure and movement of the arm, were obtained in the case of a Mrs. H., in which, in addition to the removal of the tissues ordinarily removed, the floor of the axillary space, the fascia of the serratus magnus, and subscapularis, and the edge of the latissimus dorsi were removed, together with the supraclavicular glands. These latter were removed through an incision above the clavicle.

With the tension sutures properly placed, the edges of the wound can be brought together without marginal tension. In coaptation, adhesive straps are of much value. Indeed, the coaptation of the margins of the wound is, for the most part, accomplished by adhesive straps, aided not infrequently by subcuticular sutures of catgut, and, in rare cases, a few through-and-through sutures are used.

Of no less importance than the coaptation of the margins of the wound is the coaptation of the skin to the underlying surface. If this part of the coaptation is perfect, there will be little likelihood of subsequent

Fig. 3.—Recurrent adenocarcinoma before operation, showing how much tissue it was necessary to remove.

trouble from lack of motion in the shoulder or from venous stasis, except, of course, the stasis due to compression of the vein by recurrence of the carcinoma. Lymphatic edema will occur in a small percentage of cases as a direct result of the operation, owing to the cutting off of the communication between the lymph vessels of the arm and those of the neck, and, under these circumstances, is rather an indication of a complete operation than otherwise. Edema of this kind usually manifests itself soon after the operation, and is usually at most a source of some inconvenience. The point is that we have removed the anterior wall, together with the cellular and glandular contents of the axilla, and to secure subsequent freedom of movement of the shoulder nothing more nor less is necessary than to apply the skin flaps accurately to the remaining walls and secure their union without infection. Of especial importance is it to secure coaptation of the skin and underlying cellular tissue to the apex of the axilla. Failing in this, there will be formed a smaller or larger wedge of connective tissue in the apex of the axilla, closely adherent on all sides, or a bridle will be formed

at some distance below the joint and firmly attached to both inner and outer axillary walls. The natural result of either condition will be inability to raise the arm and more or less interference with the return of blood from the arm. To secure the opposition necessary to prevent those untoward results, I relied on a snug application of the external dressings until something less than a year ago, but it was found, not infrequently, that they were too tight for comfort and produced considerable swelling of the arm, forearm and hand. To overcome this difficulty, I conceived the idea of using subcuticular stitches of catgut to secure the apposition necessary, and have used them in six cases with perfectly satisfactory results in all save one, which is shown in Figure 1. In this case, the incision is faulty, but, notwithstanding this, a proper placement of the stitches would have prevented the inhibition of movement which is present. (The arm can not be raised higher than it appears in the picture.) The line of incision in the skin should

Fig. 4.—Recurrent adenocarcinoma seven days after operation, showing degree of freedom of movement in arm.

have been fixed well up in front of the joint. Two or three stitches are usually sufficient.

I described this method to several of my friends and requested them to try it, and I would be glad to hear of their results. The advantages of this technical device over others, whose object is the same, are:

1. The certainty of the good results.
2. The comfort it secures to the patient.
3. Its simplicity and ease of execution, and
4. More rapid recovery of usefulness of the arm.

Figure 5 is from a photograph taken fourteen days after operation. The wound area in these cases is so large that with the most perfect hemostasis practicable there will be enough oozing to cause considerable accumulation of blood under the flaps while the margins are being coapted, unless measures are taken to prevent it. The use of hot compresses has already been referred to, but I wish here to speak of their use more particularly. As soon as the axillary space is cleared, a hot compress is placed in it and held snugly by an assistant while the removal of the parts is being completed, and the same thing is done with the remaining wound area as soon as it is cleared. The aim is to keep these compresses applied as continuously and as long as is consistent with the reasonably rapid completion of the work. The one in the axilla is not disturbed until one is ready to place the sutures that anchor the skin in the apex, and only just enough to permit this to be done. The margins are sutured over the compress until its lower margin is reached when it is withdrawn. During the suturing and after the withdrawal of the compress, an assistant is directed to keep the flaps closely applied to the underlying compress and chest wall, respectively. The compresses in the lower and inner aspect of the wound are removed for the placing of the tension sutures. Before the last stitches are tightened, the flaps are methodically compressed toward the opening to remove any blood that may have accumulated; the stitches are tightened, the adhesive straps placed, and the dressing put on. Care should be taken to apply this so that it will hold the raw surfaces snugly in apposition. The arm is carried in a sling for a week, when the patient is allowed to use it with caution for

Fig. 5.—Showing result of using subcuticular stitches of catgut. Fourteen days after operation. Hand can be raised to head.

another week, after which she is allowed to use it as she pleases.

The first dressing is allowed to remain undisturbed for a week, when it is taken off and another applied for a week longer, when no further dressing is needed unless it be a few layers of gauze to protect the tender surfaces. The patient is put to bed, with the head and trunk well raised, and is allowed to assume the full sitting posture as soon as she will. Patients are usually walking about by or before the end of the week.

CONCLUSIONS.

In conclusion, permit me to emphasize the following points:

1. Complete closure of the wound after removal of cancer of the breast may be secured and drainage dispensed with in nearly all cases if proper attention be paid to the placing of the incisions, the securing of hemostasis and the use of tension sutures.

2. Venous stasis in the arm and lack of motion in the shoulder, as postoperative results, may be avoided in nearly all cases by avoiding infection and keeping the wound surfaces in close apposition until healing is complete.

3. The best means of accomplishing the last-named object is a few buried sutures in the apex of the axilla and a properly adjusted compressive dressing held in place by adhesive plaster.

DISCUSSION.

DR. WILLIAM L. RODMAN, Philadelphia, agreed with Dr. Porter as to the necessity of the free removal of the overlying skin, even in such cases as show that we can not get primary union. He inclined to the belief that possibly the greatest mistake that is made in practice generally is to subordinate the probabilities of a radical cure to securing primary union in every case. He said that we should keep constantly before us that Gross and Pancoast and the older surgeons reached 10 and 15 per cent. of cures, but only by very freely removing the skin. A complete axillary dissection was never done, and muscles were not destroyed. Whatever good was in these operations must have been in the free removal of skin. Therefore, he thinks that we should not accentuate the necessity for getting primary union, even in a majority of the cases. It is all very well if it can be done and without making too much tension, and this, he said, can be done, as Dr. Porter says, by undermining the skin, or by skin grafting, which can always be resorted to to cover in any defect that may exist.

Dr. Rodman has done the operation according to the method described by Dr. Porter a number of times, and he has also advocated strongly the operation of Warren, which is practically the same. He liked it very much and thought it the best operation he knew, inasmuch as it has generally made primary union possible, but he has found in a number of cases a bridle of skin which fetters and prevents the uplifting of the arm beyond that extent, thus interfering with the doing up of the back hair, etc. While Dr. Rodman still believes that that operation is one of distinct value, he has obtained recently a better result from the operation of Jackson, and prefers to place the incision in that way. He believes that it is a mistake to cut on to the arm, or, at least, to go low down on the arm.

Dr. Rodman emphasized the necessity of removing the muscles in every case of cancer of the breast, although he was not prepared to say that the muscles will be involved. Researches have demonstrated that the fascia of the muscles usually will stop limitations of the growth, but recent anatomic discoveries show that Halsted built better than he knew when he insisted on the removal of the muscles in every case. For, in the first place, a complete axillary dissection can not be made with the muscles *in situ*, and Gross and Pancoast demonstrated that occasionally there will be lymph glands which can not be felt with the muscles in position. Therefore, it is necessary to remove the muscles in every case, otherwise the operation is incomplete.

As to drainage, Dr. Rodman admitted that in the majority of instances the wound can be closed without drainage, and yet it certainly is the custom of American surgeons to drain after amputations of the breast. In preparing a paper on this subject some time ago, he wrote to fifty American surgeons, and of the twenty-one who replied, there were three who did not use drainage. Certainly drainage is not necessary in case of a small breast particularly, but Dr. Rodman believes that, as a rule, it is just as well to drain.

Speaking of the necessity of invading the neck, Dr. Rodman stated that he is satisfied that we do not invade the neck as often as we should. Recent anatomic investigations show that if the tumor is located superiorly, in the upper hemisphere of the breast, it is drained by the lymphatics which pass from the clavicle into the glands above the clavicle and not directly into the axilla. Therefore, in the case of tumors that are situated superiorly, it is unnecessary to enter the neck in every case.

DR. MILES F. PORTER, Ft. Wayne, Ind., was very glad indeed that Dr. Rodman emphasized the necessity of not sacrificing the chance of a perfect recovery for the sake of securing primary union. In the case he reported the breasts were removed as widely as any one removes them, and yet, in the majority of cases, union was achieved. Dr. Porter invades the neck, when it is the proper thing to do. As to drainage, he said that it is never too late to mend. The sooner those who make it a rule to drain, make it a rule not to drain, the better.

PLASTIC RADIOGRAPHY.

A PRELIMINARY COMMUNICATION.

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Radiographs, usually spoken of as skiagraphs, are not, as the latter name would imply, mere shadowgraphs or silhouettes; they are, rather, the result of the superimposition of semishadows or half-tones as they are called in photography, whose size, shape and intensity depend on the size, shape and molecular density of the object to be radiographed. But such pictures have never been interpreted as perspectives or "plastic" reproductions, and successful attempts have never been made to obtain "relief" effects except by means of stereoscopic reproductions.

Fig. 1.—A "plastic" radiogram, showing distinct shadow of soft parts, with high-lights and shadows of the bones, giving relief effects. Print on bromid paper direct from the combination of the negative and positive.

Béla Alexander, a country practitioner hitherto unknown, living in an obscure part of Hungary, first published[1] a method of obtaining "plastic *x*-ray" photographs. It is through the efforts of one of us (Rosenberg) that the substance of this and other contributions of Alexander and other Hungarian writers in the various Hungarian medical journals has been collected and abstracted. The method as they give it is long and tedious, full of archaisms and omissions of most important details such as the time and methods of exposure, copying, registering, printing, etc. We have tried

1. Orvosegyesület, March 10, 1906.

many methods, always rejecting anything which could smack of "dodging" (as the professional photographer would say) and are now ready to report the following provisional modification of Alexaander's method:[2]

A careful exposure is made with two tubes on a specially prepared double coated *x*-ray plate. This plate is coated so that the slower emulsion is on top, and was made for this process, together with the plate for the positive (No. 2) by the Lumiere Company.

The first tube used for the double exposure is a very soft one, and without changing in the least the relations between the tube and the object and the object and the plate a second exposure is given with a hard tube. This change of tubes is easiest done by using a compression diaphragm apparatus of the Albers-Schoenberg or Freiberg type, in which latter the tube holder is a separate piece and has two sights for centering the tube. My own apparatus has a shallow wooden cup accurately centered over the diaphragm for receiving the tube; thus in using tubes of the same size the target will always fall approximately in the same place.[3] Neither the object nor the plate dare be disturbed in the least during this change. Although the European writers claim to have had great difficulty in determining the relative lengths of the exposure to the various tubes, we have found that for very soft tubes followed by medium hard ones the relative exposure will be about as 5 to 1. That is, if with a certain current one would ordinarily expose, say, a hand twelve seconds, then for "plastic" work the first exposure should be ten seconds and the second two. Of course no hard and fast rules can be drawn.

Fig. 2.—Ordinary radiogram of same hand as shown in Figure 1, made with a moderately soft tube: exposure 12 seconds. Note flatness and weak shadow of soft parts.

The plate is then developed in the usual manner and must be quite dense and contrasty; if the exposures have been correctly timed "plastic" effects will already be observed in this plate, which is, of course, the negative (No. 1). After the negative has been dried, a positive (No. 2) is to be made by direct contact in a printing frame, using a slow plate on the order of a lantern slide plate. The positive must be equal in density and contrast to the negative.

The plates are now placed back to back and accurately registered. This is best done by scratching on the negative before making the positive a short fine vertical line in the center of the upper edge of the plate and two short fine horizontal lines, one each in the lower right and left-hand corners. These fine scratches on the negative will, of course, be reproduced on the positive by corresponding fine black lines. If the plates thus marked are placed back to back and held together by light spring clamps and examined in a strong light sending out parallel rays—an automobile gas lamp, for instance—they can easily be moved one over the other until these fine lines are found to overlap accurately. The plates are now properly centered and are permanently bound together with passe partout binding paper.

Fig. 3.—Plastic radiograph of a fractured elbow showing stereoscopic projection of the internal condyle. Picture was taken with the internal condyle and ulna nearest the plate. The picture shows best if held three feet away and two feet below the level of the eyes.

A print must now be made with the paper in contact with the positive plate, and for this purpose we advise the use of bromid paper, as it alone has the requisite speed to take the place of the Plates 3 and 4 of Alexander's method. The printing of No. 3, the "plastic," can only be done with parallel rays of light which must strike the plates at an oblique angle. Ordinary light is, of course, out of the question on account of non-parallelism of the rays, dispersion and reflection. For this purpose we use the aforementioned automobile gas lamp at a distance of from ten to twenty feet. The plate holder stands at an angle of about 45 degrees to the plane of the lamp, thus giving very oblique illumination. The distance from the light to the plate does away with any

2. Alexander makes use of four plates before his final print can be obtained. We have shortened the method and use only two.

3. By using a Mueller tube No. 16, for hard and soft rays, one can obviate the use of two different tubes, as this tube No. 16 is constructed in such a manner that by changing the connecting wires to different cathodes one can get soft or hard rays at will.

possible unequal illumination, for the nearer edge of the plate necessarily receives more light than the more distant one. The "plastic" illustrating this article (Fig. 1) was exposed fifteen minutes on bromid paper.

When developed the print (No. 3) will show beautiful "plastic" effects and the soft parts usually stand out in wonderful clearness. The more perfect the first negative—Plate No. 1—the better the "plastic."

How does this "plastic" result from the double exposure and the combination of the negatives? We do not know. According to the law and the prophets the combination of an equally dense and perfectly centered negative and positive should result in an absolute blank, as the opacities in the one and the transparent parts of the other should counterbalance.

How does the "plastic" differ from the ordinary skiagram? As previously stated, the "plastic" does not consist merely of the overlapping of half-tones of different intensity, but contains "shadows and high lights" —the two light values which make an ordinary photograph or drawing stand out in relief.

Are the effects mere photograph dodges? So the skeptics have claimed, and at first sight we were inclined to the belief that they were mere artifacts. But one by one the skeptics have been silenced and have joined the ranks of the believers until even Schellenberg, the earliest and firmest opponent, has been converted and forced to admit the "plastic" radiography to the greatest advance since Roentgen.

As for the theories and rationale of "shadowgraphs and plastics" and the explanation of the various phenomena involved in their production, we are not yet able to speak from conviction. It has taken most of our time to perfect the details, and we shall give at another time and in a more suitable place an explanation of the various principles involved.

A SIMPLE AND SAFE OPERATION ON THE FRONTAL SINUS BY THE INTRA-NASAL ROUTE.

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CHICAGO.

The instruments used in this operation are two frontal sinus rasps, two tapering curved chisels and three protectors.

The frontal sinus rasp (Fig. 1) is made on the same

Fig. 1.—Frontal sinus rasp, showing in outline exact length and width of rasp.

Fig. 2.—Chisel, showing in outline exact size.

principle as the old-fashioned coarse horseshoe rasp, from which I derived the idea. It is slightly curved at the rasp end to fit into the frontal sinus and the teeth are on the longitudinally concave surface, pointing toward the handle, so that when traction is made on the rasp, the bone anterior to it is rasped away, as illustrated in Figure 5. The posterior surface of the rasp is perfectly smooth and flat.

The chisels (Fig. 2) are short, curved and tapering. The handle at the chisel end is very slender so that the chisel can be manipulated under the direct vision of the eye. The edges are tapering as well as blunt, so that if the edge should strike a bony surface it would tend to glide off instead of penetrating.

The protectors (Fig. 3) are made of brass and in three different widths, as illustrated. They can be bent easily into shape on the flat, but not sideways.

I have performed these operations under local anesthesia. The cocain crystals are rubbed into the mucous membrane with a cotton swab on an applicator

Fig. 3.—Frontal sinus protectors.

which is first moistened with adrenalin chlorid 1 to 1,000, and then dipped into the cocain crystals. The entire olfactory region as well as the bulla ethmoidalis and unciform plate are thus anesthetized. The middle turbinate is then removed by the ordinary methods and the processus uncinatus of the ethmoid bone is removed with the larger chisel.

A frontal sinus catheter, with syringe attachment, is then inserted into the frontal sinus and a half dram of a 10 per cent. solution of cocain in adrenalin 1 to 1,000 is injected into the sinus. A pledget of cotton is placed over the infundibulum for a few minutes to take up the cocain as it returns from the sinus. The largest possible protector is now inserted into the frontal sinus, and if the smallest protector will not enter, which is rare, a good-sized probe is used, until later in the operation when the protectors can be inserted.

Having the protector or probe, as the case may be, *in situ*, the larger chisel is placed in position as illustrated in Figure 4, and a part of the processus frontalis of the superior maxillary bone, as well as a part of the spina frontalis of the frontal bone, and the anterior medial wall of the labyrinthus ethmoidalis are chiseled through and removed with forceps or curettes.

The chisel must always be kept in direct line with the protector so that the tabula interna is not endangered. There is a considerable space between the spina frontalis and the tabula interna of the frontal bone, and the operator can almost always chisel without touching the protector, for the moment the chisel has chipped off a piece of bone it has to pass through a space before it encounters the protector, and the hand nearly always will stop the chisel before it touches the protector; and in case it does strike the protector, the hand has reduced the force to such an extent as to make hardly a mark on the protector.

As stated above, the edges of the chisel are dull and tapering, so that if the edge should touch the lamina papyracea of the ethmoid bone or the tabula interna of the frontal bone, it will slide off and by the time the chisel has traveled through the space of about half an inch, under proper care, would not have enough force to penetrate even if the edges were sharp.

The anterior ethmoidal cells are removed with forceps or curette, and by this time the frontal sinus rasp may

be introduced into the sinus; and if not, the smaller chisel is used to make the opening a little larger. When using the small chisel high up I put in two protectors at a little different angle to insure still better protection.

The structures to be guarded against injury are the lachrymal bone, lamina papyracea and the inner lower floor of the frontal sinus. By keeping a prepared skull in front of you while operating it is almost impossible to penetrate these structures, but an assistant can put his finger into the orbit and can tell at once whether the chisel is lifting the orbital periosteum. The lamina cribrosa is not in danger because the chisel is directed outward and not in the direction of this structure. The tabula interna is protected first by the protectors, and

Fig. 4.—Showing chisel and protector in position.

Fig. 5.—Frontal sinus rasp in position.

second by the fact that the chisel has to go through a space before touching it, and being carefully held by the hand, loses its momentum by the time it reaches this structure.

The frontal sinus rasp is now easily introduced, as illustrated in Figure 5. With this instrument the spina frontalis is rasped out, as well as the frontal accessory ethmoidal cells, if present (Fig. 6). There is absolutely no danger to the intracranial structures, and the worst thing that could happen would be to rasp through the orbital wall, but this can be avoided by an assistant putting his finger into the orbit.

The rasp must not be directed directly forward, but outward and forward, and care must be taken not to withdraw the rasp too far, as it will damage the septum and cause synechia between it and outer wall, as occurred in one of my cases, which was, however, easily remedied. The sinus is then curetted with flexible curettes and diseased membrane removed. The reaction following this operation is very slight, and patients who have been suffering pain for several weeks will sleep with comfort the first night after the operation.

The sinus is packed with sterile gauze, soaked in carbolized petrolatum, to which has been added a few drops of oil of cloves. In twenty-four hours the packing is removed, and after that the patient is left absolutely alone, except that care should be taken that no adhesions form between the septum and the outer wall; if granulations form, cauterize them with silver nitrate.

I believe that my frontal sinus rasp would make a valuable addition to Dr. Ingal's method of making an opening into the sinus with a burr, as the rasp would fit into the opening which his burr drills out, and thus the opening could be enlarged three or four times. I feel that my chisels are less dangerous than the drill.

I have had the pleasure of seeing some of Dr. Halle's patients operated on by his drill method, and he makes

Fig. 6.—Showing size of opening when operation is completed. The ethmoid cells are all removed in this preparation.

a good large opening. I, however, consider my method much simpler, requiring but a cheap instrumentarium, and the operation can be done in a much shorter time. My experience with drills, run by motor power, is that it is more or less difficult to keep them absolutely under control, whereas my rasp can be used without any danger whatever to the intracranial structures.

I believe that with this method a large majority of the frontal sinusitis cases can be cured without resort to the external disfiguring operation. This operation should be done in all cases where an external operation is indicated, as it does no harm and is of great assistance in diagnosing cholesteatoma or tumors in the sinus, and should an external operation be necessary, a good drainage has already been established of larger size than is ordinarily made when doing the external operation.

Cool Temperature Checks Mosquito Biting.—Dr. Carlos J. Finlay, chief sanitary officer of Havana province, thinks that in Havana a daily mean temperature below 23 C. (73.4 F.) does not allow the stegomyia to bite and suck blood.

THE CLASS METHOD OF TREATING CONSUMPTION IN THE HOMES OF THE POOR.*

JOSEPH H. PRATT, M.D.
Physician to Out-Patients, Massachusetts General Hospital.
BOSTON.

In the great out-patient department of the Massachusetts General Hospital several hundred consumptives seek advice and treatment every year. In my own clinic in that institution I have frequently seen two or three new cases in a single morning. In some of the favorable ones the patients are able to enter the state sanatorium at Rutland. But there are many more who have families depending on their weekly wages and no money in the bank. These are often fairly healthy looking men and women who say all they need is some medicine to stop the cough or a good tonic to brace them up. Others too ill to work and yet with a good fighting chance for recovery under sanatorium treatment can not pay even the small weekly charge at Rutland. There is still another group, eager to get well, willing to spend their scanty savings if their life can be saved, and sometimes

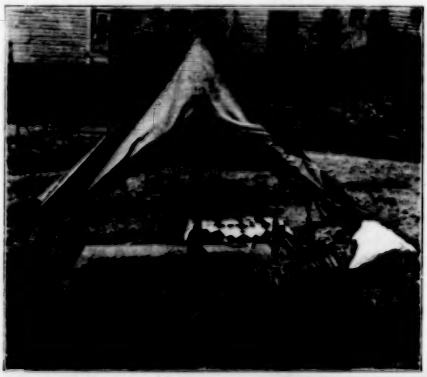

Fig. 1.—Tent converted into canopy by fastening up the sides and ends. Photograph shows proper position of patient in reclining chair.

with kind friends and relatives who are willing to lend them money, who are refused admission to the sanatorium because the disease is too far advanced.

One day I found among the new patients two sisters, sitting side by side in the examining room. The elder presented the typical picture of advanced phthisis. In the other girl the disease was just beginning. I called the younger sister aside and explained the nature of her illness, but assured her that if she went to Rutland for a few months in all probability she would recover. If she continued to work, I said, the disease would surely progress and her life would be the penalty. I told her frankly that her sister's lungs were so extensively diseased that I could not hold out to her any hope of cure.

She paused a few minutes before speaking and then told her story. Her parents were old and feeble and entirely dependent on her scanty earnings. With no outward sign of the inward struggle, she quickly made her final decision and said: "Before there was sister and I to work for father and mother, now I am the only one. I can not leave them."

There was no answer I could make. They left the room and I have never seen them since. Doubtless there were many people who would have been glad to help this unfortunate family, but I did not know where to find them and there was no organization to which application could be made, as they lived beyond the city limits and could not look for help to the Boston Society for the Relief and Control of Tuberculosis or to the Associated Charities. Furthermore, this, unhappily, was no isolated case. Every physician working in a large dispensary has had similar experiences. Thousands of men and women make this same renunciation. A few months of treatment would have restored the girl to health. Yet to meet the conditions in that family, home treatment, not sanatorium treatment, was indicated. The problem, as in this case, is often more complex than providing free treatment in sanatoria. There was the family to be supported and the sick sister needed nursing and medical attention.

Fig. 2.—Simple platform erected where neither yard nor roof were available. Total cost, $11.50. The patient for whom it was built had advanced tuberculosis. He spent most of the day on this platform and slept here every night for a year. He gained sixty pounds in weight while in the class.

Thanks to the Rev. Elwood Worcester, the rector of Emmanuel Church, such tragedies are fortunately a thing of the past at the Massachusetts General Hospital. If the two sisters had come to the same clinic a year later they would have been referred to the Emmanuel Church Tuberculosis Class and I could have assured the younger sister that those in charge of the class would find some way to solve the financial difficulties so that she could give up her work and take the rest treatment at home. She would have also been told that the results obtained in the class even with advanced cases had been so encouraging that some hope of recovery might be held out to her sister. The two girls would have gone home cheered and hopeful.

On the following day the friendly visitor would have called and explained to them and the rest of the family more about the class, the nature of the disease, the manner of its spread, the methods of disinfection, and how to get well by taking the treatment. Plans would have been made at once for erecting a balcony so that both

* Read at the Third Annual Meeting of the National Association for the Study and Prevention of Tuberculosis, Washington, D. C., May 6, 1907.

girls could sleep out of doors. The friendly visitor would have begun at once the search for a housekeeper if the mother was found to be too feeble to do the work properly and to care for the sick ones. The financial problem would have been attacked at the same time. The employer of the sick girl would have been visited and his aid solicited, the friendly visitor would have called on the priest or minister and I am sure that his aid would have been secured, for we have never yet appealed in vain to Protestant, Catholic or Jewish organizations or to charitable or fraternal societies. If all other channels of relief were closed, and if a volunteer visitor of the class were unable to secure loans or gifts, then the actual necessities of the family would have been paid out of the class treasury until the girl was able to work again.

What the Emmanuel Church Tuberculosis Class has been to its members and what happiness it has brought into their lives is indicated by the numerous letters sent by its members who are now working, after years of illness and inactivity. The class was organized in July, 1905. In an article published in *The Journal of the Outdoor Life* the following September the plan of treating poor consumptives by sanatoria methods in their

Fig. 3.—Platform and tent erected on pitch roof.

own homes was outlined. The first report was published February, 1906, in the *Boston Medical and Surgical Journal* and the class method explained more fully. Recently a report was issued by Dr. Hawes and Dr. Floyd of the work done in the Suburban Tuberculosis Class which was formed in January, 1906. This organization is designed for those consumptives who live too far from the city to be visited by the paid nurse of the Emmanuel Church Tuberculosis Class. In the suburban class the visiting is done by volunteers in the various towns and cities where the members live.

The admirable paper of Hawes and Floyd describes in detail the class system. It is important that the class should be small, as the doctor and the friendly visitor must establish close personal relations with each member. In the Emmanuel Church Tuberculosis Class the limit of membership is twenty-five. For the greater part of the time we have had from fifteen to twenty members. If more than twenty-five consumptives are to be treated an additional class should be formed, as the work can be carried on most effectively in small units.

In April, 1906, money was offered by ladies outside of Emmanuel parish for extending the work. Instead of increasing our membership, a separate class was organized. Each class has its own directing physician and a paid friendly visitor who devotes practically her entire time to the work. Nearly all of the members have been referred from the Massachusetts General Hospital. The cases taken into the class were those patients to whom other avenues of escape were closed. Either they were too poor or the disease was too far advanced for them to gain admission to the state sanatorium. Three advanced cases, rejected as unfavorable by the examining physician for Rutland, have recovered from the disease in our class and have been allowed to return to their work.

Our first member is now the friendly visitor in the Arlington Street Church Tuberculosis Class, which she has served faithfully and satisfactorily since its organization in April, 1906. I take pleasure in reporting that she insisted on using her first savings to repay the Emmanuel Church Tuberculosis Class the money loaned in her sickness and need. Our second member, who had had a cough for five years, has completely recovered. He is a painter by trade and has not lost a day's work from illness since he graduated from the class a year ago this spring and has not lost in weight, and this in spite of the fact that he has been doing inside painting. The third member, whose case was described in detail in my first report, has been working over a year. Through the generosity of a lady of the congregation of Emmanuel Church a little tailor shop was provided for him on River street. During the spring and summer he worked with the door and window always open so that he might still get fresh air while at his trade. He has not lost an ounce of the forty pounds he gained in the class and, although he works eight or ten hours a day, he looks the picture of health.

In all, fifty-two consumptives have been admitted to the class since it was started nearly two years ago. The membership is confined to those in whom the clinical diagnosis has been confirmed either by finding tubercle bacilli in the sputum or by a positive tuberculin test. Deducting fifteen, the number of present members, thirty-seven are left. Thirteen of these were in the third stage of the disease (far advanced tuberculosis). Three in this group have recovered and are now at work. Seven have died. Four of them were on the roll of the class at the time of their death. Two of the remaining three were discharged for not conforming with the rules and one is now too ill to attend the class. There were fifteen moderately advanced cases. Of these one patient was sent to Rutland in an improved condition; two left the class because they considered themselves well, although the disease was not arrested and the danger of returning to work was fully explained. One of these had gained twenty-one and a quarter pounds and the other ten and one-half pounds in a single month. These two are the only ones that have withdrawn from the class.

Another in the group of moderately advanced cases was unable to continue treatment on account of chronic joint disease (arthritis deformans). The remaining nine patients (60 per cent.) of the fifteen moderately advanced cases left the class with the disease arrested. In five of these the disease was apparently cured. We had in this series nine incipient cases and in seven of the patients the disease was apparently cured and in the other two the disease was arrested. In other words, 75 per cent. of the patients out of the twenty-four incipient and moderately advanced cases recovered. No one is

graduated until the disease is arrested and the member able, in the opinion of the physician in charge, to return to work. Seventeen of our members have fulfilled these requirements and have graduated. Their average gain in weight was 25.2 pounds. The greatest gain was sixty pounds. This record is held by a negro, whose weight had fallen from 200 to 146 pounds during his two years' illness. Eight have been at work twenty weeks or over and in none has the disease recurred.

EXPENSES.

The expenses of the class from July 1, 1905, to May 1, 1907, were about $2,000. A little more than $200 was contributed by friends outside of Emmanuel parish and by the patients themselves. The remaining $1,800 was furnished by the church. If the value of a life during the productive years be fixed at $2,000 and the cost of a two years' sickness, which is about the average duration of a fatal case of consumption, be placed at $1,000, this would mean that Emmanuel Church, by saving the lives of seventeen persons, has saved $54,000 by an expenditure of $2,000. Six of the seventeen were married men with families depending on them, and five were the mothers of little children. Emmanuel Church has furnished the facilities for leading the out-of-door life, such as tents, cots, reclining chairs, and blankets. Medical care and nursing have been furnished free. Drs. J. B. Hawes, C. Floyd and N. K. Wood have been associated with me and gave their services. The zeal and tireless labor of the friendly visitor, Mrs. Elsie L. Oreon, has been the chief cause of our success.

The families of our members have been taught to help themselves. Sometimes they have been able to let rooms. In several instances we have boarded one of our members in the family of another. This is an admirable arrangement, because this money paid out for board gives a little available cash each week for a needy family, and thus two members are helped.

The four chief factors in the success of the class have been: 1, The patients have spent the nights as well as the days out of doors; 2, they have been kept at rest in the recumbent position, not only until their temperature is normal, but until the symptoms of active disease have disappeared; 3, the system of daily records devised by Dr. C. L. Minor; 4, the weekly meeting. Implicit obedience of the rules and regulations has been demanded.

FRESH AIR DAY AND NIGHT.

The importance of Dr. Millet's discovery of the value of sleeping out of doors, even in a harsh climate, in the treatment of consumption can scarcely be overestimated. If any one thinks it is the same thing to sleep in a room with the windows open as to sleep out of doors, personal experience will soon convince him of his mistake. All of our members are required to sleep in the open air. This has proved no hardship even in winter. Plenty of blankets and warm clothing keep them comfortable. They frequently tell of the pleasure they find in sleeping out of doors, and some declare they will never sleep in a room again. If the house of the candidate for membership offers him no opportunity for living out of doors, then he must move. The cost of moving is paid out of the class funds if necessary. Our members sleep on flat roofs, piazzas, balconies, or in yards. Protection from rain and snow has been usually secured by small wall tents. These have been furnished free to all members who could not afford to buy them. An ordinary army tent, measuring seven feet by seven feet with an extra "fly," is used. This costs $7.25. But it should be understood that the purpose of the tent is simply to furnish a shelter in time of storm. The ventilation in a tent with the sides fastened down is as bad as in a stuffy room. Our tents are converted into canopies by tying back the ends and rolling up the sides (Fig. 1). In fair weather the head of the bed is drawn outside of the tent so that the face will be exposed to continuous currents of fresh air. In stormy or windy weather one or, if necessary, two or more sides of the tent may be fastened down to keep the rain or snow from reaching the bed. In summer the tent roof shades the patient from intense sunlight.

We use in some instances, instead of tents, small balconies, built in front of a window, usually on the second story. These balconies are simple platforms, protected with a railing. Adjustable awnings and screens keep the balcony dry in stormy weather. The balcony shown in the photograph (Fig. 2) was erected for one of our members by his landlord. It cost $11.50. The awning was given by a neighbor. Another member had an elevated platform (Fig. 3) built for $6.50 Tents may be readily erected on inexpensive roof platforms (Fig. 3).

There is an advantage in placing the patient's bed out of doors that I have never seen mentioned. It removes the source of infection. With the patient lying in bed out of doors the danger of house infection is eliminated, and even if he is careless in his habits Nature's disinfectants, sunlight, rain and wind, render him practically harmless. This applies particularly to patients with advanced tuberculosis. It should not be forgotten that Flügge's observations showed that not only the sputum but the smallest droplets of mucus projected from the mouth in coughing, hawking and even in speaking contain tubercle bacilli.

In four (27 per cent.) of the families now represented in our class, unsuspected cases of tuberculosis have been found among the children. The disease seems to be chiefly spread by house infection, and the most dangerous are the advanced cases with persistent cough and abundant expectoration who live in small, overcrowded, ill-ventilated and poorly-lighted rooms.

The reason that the death rate from tuberculosis is higher in Boston than in Berlin or London is probably due to the fact that these cities have had hospitals for advanced tuberculosis, while Boston has had none, except for paupers and criminals.[1]

We do not use the window tent. Doubtless a patient in a properly constructed window tent gets fresh air at night, but in the morning and evening it will be almost inevitable that precious hours are lost in the house that would have been spent in the open air if his bed had been out of doors. Furthermore, the window tent does not prevent house infection.

THE REST TREATMENT.

The chief reason that so many of our moderately advanced cases have recovered seems to lie in the fact that we have insisted on absolute rest in every instance. Even in cases without fever, rest in the recumbent position is continued until symptoms of active disease have disappeared. I find less difficulty in keeping a patient quiet all the time than half the time. The rest treatment simplifies wonderfully the management of the case. It saves the patient from many dangers. Each

1. Money has been appropriated by the municipality, and plans have been formulated for the establishment of a hospital for advanced cases of pulmonary tuberculosis.

patient is provided with a comfortable canvas reclining chair. The friendly visitor at her first visit selects the exact spot out of doors where the cot-bed and chair are to be placed. The chair must not be moved without permission. Many of the members spend the greater part of the day on their cot-beds. This is encouraged. The patients are never allowed to take any of the prescribed rest in a sitting position or in any form of rocking chair. No sewing or other hand work is allowed and only a moderate amount of reading. The "cure" consists simply in keeping in the recumbent posture all the time, except that members free from fever are allowed to dress themselves and to take their meals at the table.

The members do not find the enforced hours of rest irksome. It is, of course, hard to keep quiet for the first week or two of treatment. Much harder for some than for others. But the rest habit is soon acquired. In the past year not a single member has begged me for exercise. It is rare, indeed, that they ask for it after the treatment is fairly begun. Our experience supports the opinion of the lady quoted by Benson in his "Upton Letters," who maintained that the recumbent posture was conducive to cheerfulness. Resting in the open air seems to keep up the muscle tone, for when walking is finally allowed the amount can be rapidly increased without tiring the patient.

Attending the weekly meeting of the class involves considerable exertion and gives us a measure of the gain in strength. No one with persistent fever is allowed to attend the class. When applications for membership are received from consumptives with considerable fever, they are told to place their bed out of doors and remain absolutely at rest until their temperature is normal. The promise is held out to them that they will be taken into the class when their fever leaves. Four months ago a man with advanced phthisis and high fever wished to join the class. I sent him to bed. The friendly visitor called and gave the usual instruction to him and his family and left a record book. At the end of a month his temperature had become normal and he was permitted to attend a class meeting. He lived at the top of a steep hill. On returning home from his visit to me on the day he began treatment he had difficulty in climbing the hill and reached the top exhausted. After spending a month in bed he found, after starting for the class meeting, that he had forgotten his record book. He climbed the hill and, to his delight, found that the ascent was no longer difficult and exhausting. He gained seven pounds during that month in bed. I realize that the effort of making the weekly visit to the class is in some cases tiring and of itself injurious, but in the majority of cases the mental uplift seems to more than compensate for the harm wrought by the expenditure of strength. In exceptional instances members are permitted to attend the class only every other week.

FOOD.

Milk forms the basis of the diet in all the cases. Of course, many say when they enter the class that they are unable to take milk. It is usually an easy task to prove they are mistaken. Milk is nutritious, it is easily digested and it is cheap. Most of the members take two quarts, a few three quarts, a day. Olive oil is taken after every meal. Many object to the taste of cotton-seed oil, so that its use has been largely abandoned. As the tastes of different races are so different, we have allowed them great freedom in selecting their food. We insist that they shall take plenty of milk, considerable fat in some form, and fresh fruit.

RECORD BOOK.

The record book is the invention of Dr. C. L. Minor,[2] of Asheville, N. C., and is an essential feature of the class method. The patient records his temperature, his pulse rate, the food he eats, and every other detail of the daily life. He is required to enter in this diary the number of hours he is out of doors and the amount of milk he drinks. The book is inspected by the friendly visitor at every visit and by the physician at the weekly meeting. In my experience I have never found that keeping the records leads to introspection or depression of spirits. It is a great aid in carrying out the details of treatment. The members take pride in keeping neat records. It encourages the members to persevere.

THE WEEKLY MEETING.

This is the most important feature of the class system. It is held every Friday in a large, cheerful room at the Massachusetts General Hospital. The class meeting is a pleasant social hour for the members. One confided to the friendly visitor that the meeting was her weekly picnic. Made up as our membership is of widely different races and different sects, they have a common bond in a common disease. A fine spirit of camaraderie has been developed. They never discuss their symptoms and are almost invariably in good spirits. Frequently our graduates drop in at the meeting to get weighed and to greet their old associates. The members are weighed each week and their pulse and temperature taken by the friendly visitor, assisted by one of the senior members. The greatest gains in weight are posted conspicuously each week on the blackboard, and the member who remains out of doors the greatest number of hours during the month has his record exhibited. One patient was out of doors 706 hours in a month, an average of nearly twenty-three out of the twenty-four. Some of the sickest members gain this distinction. The favorable cases that are making rapid progress toward recovery infuse a spirit of hope in all.

After the strength of the member has been tested and increased by carefully prescribing amounts of exercise he is graduated and allowed to work. Home treatment has one advantage over the sanatorium in the fact that if health has been regained by leading the out-of-door life at home it is easy to keep up the hygienic habits after recovery. A place for sleeping out of doors and a reclining chair for resting in the recumbent posture are still available. Our graduates continue to sleep out of doors or with their heads in open windows.

MEDICINE.

Very few drugs have been given. With the patient resting in the open air cough and toxic symptoms quickly diminish so that medicines are rarely needed. Although they take large quantities of food, indigestion is rare. The use of Priessnitz's chest compresses for cough or pleuritic pains is a routine procedure. Tuberculin has been used in many of the cases. The three cases of far advanced tuberculosis that recovered were treated with old tuberculin for months.

DAY CAMPS.

The work of the Parker Hill Day Sanatorium and of the Day Camp maintained by the House of the Good Samaritan will be described by Mr. W. M. Wilson and Dr. A. K. Stone. Experience has shown that excellent results can be obtained in these day camps. A number

2. N. Y. Med. Jour., Dec. 21, 1901, and Jan. 11, 1902.

of our members enjoyed the privileges of the Parker Hill Sanatorium. The good food furnished, the cool shade of the trees, and the pleasant company more than compensates, in most afebrile cases, for the exertion of traveling to and from the camp. An ideal location for a camp would be the grounds of a large hospital situated in the heart of the city such as the Massachusetts General, the Pennsylvania, or the Johns Hopkins. Camps in connection with hospitals can be maintained at small cost, as proved by Dr. Stone and Dr. Floyd, at the House of the Good Samaritan in this city. In Southern cities the need of a summer day camp in connection with tuberculosis classes will be found well nigh indispensable. The heat of mid-day on the little porches and in the little confined spaces in the rear of the houses, of East Baltimore, for instance, will be intolerable and the patients will probably be forced into the house unless a day camp is established in some airy, open spot where the members can take the rest treatment under the shade of trees.

OTHER CLASSES.

In Boston and vicinity at least five other tuberculosis classes have been organized. The Suburban and the Arlington Street Church classes have already been mentioned. In addition to these are the Cambridge and Lynn Tuberculosis Classes and one started by the Mount Sinai Dispensary of Boston intended especially for Jewish patients who can not speak English. In January, 1906, a class was formed in Providence by Dr. F. T. Fulton. Within the past six months classes have been organized by Dr. W. L. Niles in New York City, by Dr. David Riesman in Philadelphia, Dr. F. J. Ripley in Brockton, and Dr. C. Dencker in Baltimore.

The class method has proved to be economical and efficient. It is hoped that classes will be established in cities where at the present time no systematic effort is being made to cure consumption. But it must ever be borne in mind by those in charge of the classes that the necessary conditions in the treatment of pulmonary tuberculosis are, as Dr. Osler has said, "rigid regimen, a life of rules and regulations, a dominant will on the part of the doctor, willing obedience on the part of the patients and friends"—without these and without the spirit of the living creature within the wheels the system will fail.

INSTRUCTIONS ON INSIDE COVER OF RECORD BOOK.

EMMANUEL CHURCH TUBERCULOSIS CLASS.

Name .....Address .....

Record from.....19— to.....19—

NOTES.

Make notes of temperature and pulse at 8, 12, 4 and 8 o'clock daily, movements of bowels, hours in open air, all food taken, total amount of milk, total amount of oil and butter, appetite, digestion, sleep, spirits, cough (amount, chief time), expectoration (amount in 24 hours, color, nature), exercise (if allowed), with temperature and pulse 15 minutes after exercise, sweats, visitors.

Attend every meeting of the class unless specially excused.

RULES FOR REST.

Rest out of doors is the medicine that cures consumption. Absolute rest for mind and body brings speedy improvement. It stops the cough and promotes the appetite. The lungs heal more quickly when the body is at rest. Lie with the chest low so the blood flow in the lungs will aid to the uttermost the work of healing. The rest habit is soon acquired. Each day of rest makes the next day of rest easier and shortens the time necessary to regain health. The more time spent in bed out of doors the better. Do not dress if temperature is above 99 F., or if there is blood in the sputum. It is life in the open air, not exercise, that brings health and strength. Just a few minutes' daily exercise during the active stage of the disease may delay recovery weeks or months. Rest favors digestion, exercise frequently disturbs digestion. When possible have meals served in bed. Never think the rest treatment can be taken in a rocking chair. If tired of the cot, shift to the reclining chair, but sit with head low and feet elevated. Do not write letters. Dictate to a friend. Do not read much and do not hold heavy books. Remain in the recumbent posture while reading.

THE LIFE OF QUIET.

"There are few medicines better than clouds, and you have not to swallow them or to wear them as plasters, only to watch them. Keeping your eyes aloft, your thoughts will shortly clamber after them, or, if they don't do that, the sun gets into them, and the bad ones go a-dozing like bats and owls."—Charles M. Skinner, in "Do-Nothing Days."

BLANK FOR FRIENDLY VISITOR'S REPORT OF FIRST VISIT.

Nurs 's R port. History No.

Name. Address. Age. Place and Date of Application.

House. Stories. Number of rooms. Occupies. Flat roof.

Balcony. Yard. L cality. Dust. Sunlight.

Sanit ry conditions. Length of time in present location. Record of other cases

Patient's room. Bathroom. Number in family.

Financial condition. Occupation. Habits.

Disposal of sputum. Intelligence of patient. Diet, with amount of milk taken.

Family history. Personal history.

Date of joining class. Date of nurse's first visit. Time spent.

Remarks. Improvements suggested.

OBSERVATIONS ON PLAGUE IN INDIA.*

JUDSON DALAND, M.D.

Professor of Clinical Medicine in the Medico-Chirurgical College and Physician to the Medico-Chirurgical Hospital.

PHILADELPHIA.

Plague, in the time of Galen, was any epidemic disease causing many deaths, but the word is now restricted to that acute epidemic, febrile disease, with polyadenitis, due to the plague bacillus. It is believed to be transmitted to man by fleas that have infected plague-stricken rats. This malady has doubtless existed for ages, and certain epidemics that occurred two or three hundred years before Christ were unquestionably plague.

In the fourteenth century plague was pandemic and spread from the tropical and subtropical countries of the East through Europe as far north as Greenland, and it is estimated that the mortality was in the neighborhood of 25,000,000. Between 1876 and 1889 it is estimated that more than 250,000 deaths occurred from plague. This disease is now confined to Asia and is only occasionally imported into Europe by way of Turkey. The following centers for this disease are recognized: (1) Bombay, (2) Uganda, (3) Persia, (4) Thibet, (5) the west

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coast of Arabia, and (6) eastern Siberia, in all of which plague is always present, either sporadically or endemically, and from these centers epidemics and pandemics originate.

The plague bacillus was discovered by Kitasato and Yersin in Hongkong in 1894. It is a short, thick bacillus resembling that found in chicken cholera, having a length of from 1.5 to 1.75 microns and a breadth of from 0.75 to 0.7 microns; it is ovoidal, slightly convex, rounded at each end, non-motile, aërobic and frequently appears at a diplobacillus which occasionally joins, forming short chains. This new organism takes a characteristic bipolar stain with methylene blue, the middle portion often remaining transparent. During life the bacillus is easily obtained from the bubo in the bubonic, from the sputum in the pneumonic and from the blood in the septicemic forms, and after death may be discovered in almost all the tissues. The following varieties are recognized clinically: (1) Bubonic, (2) pneumonic, (3) septicemic, (4) intestinal and (5) ambulatory. The vast majority of cases fall under the first group. The septicemic form is rare as a primary affection, but is not uncommon in the terminal stage. The ambulatory form is most active in the spread of the disease, as the symptoms are so slight as to cause but little inconvenience and, therefore, seldom come under medical observation.

One of the first cases of pneumonic plague diagnosed during life was that of Maj. Manser, who was one of the faculty of Grant Medical College in Bombay and who was under the care of Maj. Childe, the present incumbent of the chair of medicine in that institution. He presented the ordinary signs and symptoms of pneumonia. As extreme prostration showed itself early, Maj. Childe suspected the pneumonic form of plague, and the sputum, by staining and culture, showed the plague bacillus. The patient was in good health January 2 and died January 6. The nurse who attended him fell ill on the following day and died three days later of the same affection. There was no dyspnea nor the ordinary pneumonic disproportion of pulse and respiration; the sputum was a pinkish serum and bore no resemblance to the characteristic rusty sputum of pneumonia, and the general condition was far worse than could be explained by the small amount of lung involved.

My personal experience with plague includes about 50 cases observed in the Maratha Plague Hospital in Bombay during the summer of 1905. This hospital is especially devoted to plague, although it is occasionally necessary to set aside pavilions for other diseases, such as relapsing fever, etc. The hospital is composed of a number of pavilions, one story in height, with beds made of wood, the bottoms of which are covered with rattan. These beds are placed on each side of the pavilion and number about 20 or 30. Contrary to our custom the patient faces the window. The total capacity of the hospital is about two or three hundred, and in times of epidemic, by overcrowding, the capacity is doubled. No attempt is made to make bedside notes, and all records are placed on the temperature charts, which show the name, age, date of admission, temperature, and only occasionally the pulse and respiration. A record also is made of the day of the disease and the treatment. Blue and red pencil marks are used freely for any additional data.

These pavilions are thoroughly well ventilated by numerous windows and doorways. The native habitually keeps his head covered by a sheet, which strange custom is probably due to the fact that he is accustomed from childhood to covering his head with a thick turban, which renders the head peculiarly sensitive to drafts and slight changes of temperature when the head covering is removed. This sensitiveness is still further accentuated by the custom of wearing the turban during the entire day and evening, excepting when eating or sleeping. The natives occasionally utilize this strange head covering at night as a pillow, and at all times it serves as a bank, as money may be discovered tied in one corner of the material composing the head dress.

Patients with plague are transferred to the hospital by means of a two-wheeled vehicle, on the top of which is placed a stretcher. This ambulance is painted white and is in charge of two men who supply the motive power. The patient is covered by a coarse blanket, and it is the belief of the physicians of Bombay that these patients do not propagate the disease while being transferred from their homes through the narrow crowded streets to the hospital.

The expectoration in primary pneumonic cases is infective, and it is believed that the urine may possibly carry this disease, but the discharges from the bowels are believed to be free from this danger. Suppurating buboes are often highly infective, and in acute cases the pus from these buboes show large numbers of plague bacilli.

The hospital is under the direction of Dr. N. H. Choksy, assisted by a native physician. Dr. Choksy is possessed of unusual vigor, both mental and physical, and is the happy possessor of an intense enthusiasm and love for his work. He is, however, handicapped by duties which belong more strictly to a superintendent, which duties occupy time which should be spent in purely medical work. He has been in close association with plague for many years, and to-day probably possesses more practical information regarding the clinical aspect of plague than any physician in Bombay or elsewhere. The Parsees, followers of Zoroaster and worshipers of fire, although few in number, are remarkably intelligent, prosperous and charitable, highly neurotic and differ widely from the other nations of Bombay and possess many of the mental and emotional characteristics of the better class of Hebrews. Special pavilions are assigned the Parsees in the Plague Hospital, which custom is followed in other public institutions. They visit their sick at all hours and in such numbers as seriously to interfere with their proper management and nursing.

The Maratha Plague Hospital and the Arthur Road Hospital are so rich in clinical material illustrating various contagious diseases more or less peculiar to India that it is regretable that each medical student in Bombay is not compelled to live a certain number of months with these patients. Most of the cases of plague present the ordinary features of the bubonic form of the disease, but few show the septicemic or pulmonic variety. The latter occurs in about 0.5 per cent. of all the cases, although terminal pneumonia is present in about 10 per cent. of the cases. When bacilli are found in the blood 98 per cent. of the cases are fatal, and many patients enter the hospital and die before the medical officer's visit the following morning. Most patients, however, die on the third day, and the average daily mortality among the natives is 81 per cent. and among Europeans about 15 per cent.

When plague is complicated with tympanitis it is usually fatal, and when the thyroid is affected it consti-

tutes a grave complication. The common complications of plague in the order of frequency are:

1. Delirium.
2. Cardiovascular weakness or paralysis.
3. Tympanitis.
4. Persistent vomiting and diarrhea, which are rather uncommon.

The rarer complications are:

1. Aphasia.
2. Peripheral neuritis.
3. Bulbar paralysis.
4. General acne resembling chickenpox, which may appear in one night.
5. Panophthalmitis followed by total blindness, which may occur within twenty-four hours.
6. Keratitis.
7. Hematuria, which was rather common in the last epidemic.
8. Meningitis.
9. Secondary pneumonia.

In one case of plague at the end of the fifth week the classic symptoms of meningitis developed. The following combination of diseases are occasionally met with during epidemics of plague: (1) Plague and smallpox; (2) smallpox and plague; (3) relapsing fever and plague, in which case the fever chart shows a less marked crisis, but the buboes suppurate, as is usual in plague; (4) plague and relapsing fever; (5) relapsing fever chickenpox and plague; (6) plague and measles, in all such cases the mortality is very high; (7) erysipelas, leprosy and plague; (8) leprosy, smallpox and plague.

Each of these mixed infections are exceedingly rare. In fourteen hundred cases of plague but three of smallpox and plague were observed. When a case of plague occurs complicated by epistaxis it suggests the possibility of the coexistence of relapsing fever, and when subnormal temperature and perspiration also are present examination of the blood will show the presence of the spirillum of relapsing fever. Occasionally errors in diagnosis occur, of which the following is an example: A patient entered the hospital suffering from fever, bubo and pain over the bubo, particularly on pressure. During an epidemic of plague these symptoms are usually sufficient to make a diagnosis of plague. Two such cases occurred in men sent from a jail in Bombay. Examination showed that the bubo was an old enlarged gland and that the skin overlying was hyperesthetic. The blood examinations proved that they were cases of relapsing fever and not plague, and many hundreds of inmates of the jail were later seized with this malady.

The number of cases of plague in India during the summer of 1905 was comparatively few and many of the pavilions were empty. I observed in the neighborhood of fifty cases, however, all occurring in natives. The average daily mortality in Bombay was forty; during an epidemic it rises to one or two thousand. Many die in their homes without medical attendance. The majority of patients were ill two or three days prior to their admission to the hospital. The vast majority of the cases were of the bubonic variety and the glands usually affected were the inguinal or femoral, the axillary or cervical, and there was one example of primary involvment of the isthmus of the thyroid.

Not infrequently the inguinal or axillary or the inguinal and cervical would be affected in the same individual. In the majority of cases the diagnosis was based on: (1) Sudden onset; (2) extreme prostration; (3) fever, which usually decreased on the third day; and (4) painful glandular enlargements or buboes. In no instance was the diagnosis corroborated by the discovery of the plague bacillus. Clinically the introduction of a hypodermic needle into an enlarged gland and the removal therefrom of a small quantity of lymph in which the pest bacillus may be recognized, establishes the diagnosis in doubtful cases. Unfortunately the natives object to autopsies and it is the policy of the government to acquiesce so as to popularize the hospitals. In consequence no autopsies have been performed in the Maratha Plague Hospital for more than four years.

As a rule the onset of plague is sudden as if the patient was "stricken down," and although diarrhea is uncommon, it has been observed before death and is colliquative in character. The washed-leather appearance of the tongue is diagnostic.

The following is the report of two cases of plague, one occurring in Dr. N. H. Choksy and the other in his father-in-law.

Case of Dr. N. H. Choksy:—The attack began on the morning of May 7, 1904, the axillary gland showing enlargement, probably from an infection received through a small blister, which was unopened, situated on the tip of the left index finger. The temperature rose in a few hours to 106 F., accompanied by delirium. There was considerable periglandular inflammation and edema and the bubo was only moderately painful. The first two injections of the Roux serum were 100 c.c. each and subsequent injections were smaller. On the first day two injections were given; on the second day two and three injections were given, subsequently and in all 400 c.c. were administered. Ordinarily 100 c.c. repeated thrice, at six-hour intervals, are sufficient to abort ordinary cases of plague. Four hundred c.c. of serum were injected around the bubo and one injection was given on the opposite side. The temperature descended to normal on the fourth day. Afterward there was an interval of five or six days during which time he was in good health and then fever occurred with urticaria, an after effect of the serum. This urticaria affected both upper extremities, which became extremely red, many wheals formed and itching was extreme. Later a third rise in temperature ensued with pain and swelling, one after the other, of almost all the joints of the body, the wrists, elbows, shoulders, hips, knees, ankles and maxillæ. These joint phenomena were secondary to the serum. During the third week severe neuritis accompanied by spasms occurred, chiefly affecting the thighs and legs. The least movement was agonizing. Morphin and atropin were useless. Improvement was eventually secured by the use of opium, which was spread all over the limbs, which were bandaged afterward with cotton. He remained drowsy for three days. Spasms, weakness of the limbs and wasting of the muscles caused great suffering for four months. Although right-handed, the muscles of the right forearm are less in bulk than those of the left. In five months he was able to begin work, but it was necessary to move with great caution as the slightest over-use of the muscles immediately induced spasm. Lithicin in two-grain doses, four times a day until 200 grains had been taken, improved the tone of the muscles, lessened pain and increased weight. Occasionally the glycophosphites act beneficially in the nervous troubles following plague. Moderate fever was produced by nervousness and suffering and his medical adviser ordered suppositories containing quinin, which produced proctitis with retention of urine, to alleviate which a rubber catheter which unfortunately was unclean was passed and was followed by cystitis. Following the proctitis, hemorrhoids, from which he had occasionally suffered, became acutely inflamed and rectal hemorrhages frequently occurred during a period of two months and almost caused death. Relief was secured by a complete change in diet, as drugs were valueless.

Case of Dr. Choksy's Father-in-Law:—The patient was infected May 1, 1905. Returning home from business at 7 p. m., he felt sick with slight pain in the groin. He was able, however, to take dinner as usual, and had none of the premonitory

symptoms described by Hunter. As the pain in the groin increased and fever appeared, he lay down. At 9 p. m. the temperature was 101 F. and the pulse was rapid. He declined medical assistance, feeling that it was unnecessary, but in one hour, i. e., 10 p. m., the temperature had risen one degree. At 10:30 p. m. he was given 100 c.c. of serum and the following morning another 100 c.c., and at 4:30 p. m. a third injection of 100 c.c. In spite of these injections a bubo appeared on the opposite side, showing the malignancy of the infection. After the third injection the temperature fell and on the morning of the third day became normal. On the fourth day two injections of 50 c.c. each were given as a prophylactic and the buboes rapidly declined in size and he made a good recovery.

While I was in Bombay the plague commission was engaged in successfully solving the question of the transmission of plague; preliminary communications have already appeared in print and further reports will soon be published. Their experiments prove that fleas from rats dead of plague are able to transmit plague to rats, guinea-pigs and monkeys.

By an ingenious method devised by Captain Liston infected fleas were secured by placing a live guinea-pig in a room in which plague had occurred. Although a rat flea will not by choice select another animal as its host, under the influence of hunger it will attack almost any living animal. A cage of healthy rats surrounded by a fine wire gauze, when placed in a room from which patients dead of plague had been removed, remained free from plague, whereas the majority of rats, exposed in a similar manner, unprotected by wire gauze, died of plague. When rats imported from England were thus exposed they all died of plague, which suggests that a certain proportion of Bombay rats are immuned to this disease. Complete protection of healthy rats, when confined in an ordinary wire cage and placed in an infected room, was secured by suspending the cage in the air or by placing it on the floor, provided it was surrounded by a strip of fly paper wider than a flea could jump. Infected fleas secured by the live guinea-pig method, when permitted to attack healthy rats, guinea-pigs or monkeys in flea-proof cages, caused an epidemic of plague among these animals. The discovery by Captain Liston of the rat flea on the body of a Hindoo dying of plague adds one more link to the chain of evidence tending to prove that the infected flea from the plague-stricken rat is the transmitter of plague from the rat to man. It will be most interesting to learn the precise manner in which this transmission occurs and the behavior of the *Bacillus pestis* while in the body of the flea.

For many years the natives of India have been convinced of the necessity, during epidemics of plague, of (1) evacuation of villages when disease and death appears among rats; (2) burning the houses of the villagers; (3) destroying the roofs of houses so as to permit the sunshine to penetrate all portions of the dwelling, as the flea prefers darkness. The correctness of this belief is easily comprehended in the light of the results secured by the plague commission, as is also the cause of the infrequency of plague among Europeans.

It is regretable that the time allotted to this communication forbids a discussion of sanitary and quarantine questions, the present status of the treatment of plague by sera prepared in accordance with the methods of Prof. Lustig of Florence, Prof. Terni, formerly of Messina and now of Milan, and Dr. Brazil of San Paulo, Brazil. Consideration should have been given to the efficiency of adrenalin, spartin, caffein, the uselessness of alcohol and the undoubted value of Haffkine's serum as a prophylactic in plague.

THE QUALITY OF PUBLIC WATER SUPPLIES.*

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BOSTON.

It is particularly gratifying to me to be called on to speak before a gathering of physicians, as it gives an excellent opportunity to air certain grievances which, as a sanitary engineer, I have against the physician.

One of the chief of these grievances is that there is often so little apparent relation between the quality of a water supply and the health of those habitually using the water. Engineering is supposed to be an exact science, and when the cause is present the engineer looks at once for the effect. It grieves him, therefore, when a water supply is obviously polluted, when it is known to contain excreta from typhoid fever patients, that the epidemic of typhoid fever does not follow. On the other hand, he is even more annoyed when, after he has introduced an unpolluted water supply, the high typhoid fever death rate which obtained when the polluted supply was in use is not materially reduced.

Another grievance of the sanitary engineer is the impossibility of obtaining from the physician any satisfactory conclusion as to the results of the use of water which is not contaminated by sewage but which has other features generally considered undesirable. For example, we have always wished to know the effect of habitually using a very hard water or a water containing large numbers of live or decaying organisms. We have been given vague answers to the effect that while no specific diseases may be caused by such conditions in the water supply, the general effect on the system is bad and may make the users of the water more susceptible to diseases of various kinds.

All this to the man of engineering training is exasperating. One or two well-known examples illustrative of our trials may be of interest. In the city of Lawrence, Mass., the water supply was for many years taken directly from the Merrimac River, and the death rate from typhoid fever in that city was abnormally high. In 1893 a slow sand filter was constructed through which all of the water supplied to the city has since been passed and the death rate from typhoid fever was immediately greatly reduced and has continued low since that time. This seems to be a clear case of reduction in the mortality from this disease due to the filtration of the public water supply. If this was the only fact which the statistics show, the results would be satisfactory, but coincident with this reduction in the death rate from typhoid fever is a corresponding reduction in the death rate from almost every other disease. In fact, the general death rate has been very greatly reduced since the introduction of filtered water. If we say that the typhoid fever death rate has been lowered by abandoning the polluted water supply shall we say also that the mortality from other than the so-called water-borne diseases is reduced by an improved water supply?

In the city of Washington, a polluted water supply has been in use for many years and the death rate from typhoid fever has always been high. Recently works for the purification of the water by slow sand filtration have been completed, but there has been practically no reduction in the number of deaths from typhoid fever.

Is it any wonder that the man whose training has

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been in an exact science is somewhat distressed by being met with such facts as these? Fortunately, however, the engineer, in dealing with water supply problems to-day, is working for something beyond the public health, namely, public comfort. The public, in many parts of the country at least, is no longer satisfied simply to know that the use of a water supply will not produce typhoid fever, but it is unwilling to drink water which is known to contain the excreta from human beings, or water which is so hard as to be unfit for domestic purposes, or water which is so highly colored or which contains organisms giving objectionable appearance, taste or odor. In fact, it is no longer satisfied with a water which is dirty, even though it may be safe.

It surprises us many times, when we carefully examine the sources of supply, to discover what we have been drinking and enjoying. It is not appetizing, to say the least, to think of drinking water from a pond which is frequented by fishermen. Neither is it appetizing to see cows wading in a stream which provides water for our table use, yet these are the conditions which we have contentedly endured until the more recent demands for clean as well as safe water.

Waters which are free from objectionable appearance, taste or odor, as well as free from contamination, are found in nature only in the ground. A good ground-water supply obtained from a spring or well is undoubtedly the most satisfactory supply which can be secured. A good ground water is clear, colorless, odorless and practically free from any organic matter whatsoever. Any community which is favored with large areas of sandy or gravelly soil from which water can be obtained has little excuse for having a poor water supply.

There are many cities and towns where water supplies of inferior quality are in use or where expensive filtration plants have been constructed, while there is an abundance of water of excellent quality in the ground which can readily be secured.

A point in favor of ground waters which may seem of minor importance but which really means much to the consumers is the low temperature at which the water is supplied to the consumer. The temperature of ground water as delivered in the houses during the warmest months has been found in Massachusetts to be from 52° to 55° F. The water derived from surface sources is delivered to the consumers at a temperature of from 70° to 75° in warm weather. The chief points to be guarded against in obtaining a ground-water supply are the presence of iron and an excess of hardness. Hardness is likely to occur when water is obtained from soils containing limestone. Iron occurs usually where there is much organic matter in the soil from which the water is derived or through which it passes on its way to the wells. The presence of iron renders the water almost useless for many domestic purposes, but it can be removed without any serious difficulty, although the iron occurs in many different forms and different treatment must be employed with different waters.

In speaking of water obtained from wells, I do not refer to artesian wells, but to shallow wells which have depths of from 30 to 50 feet. Artesian wells are undoubtedly of great value in many parts of the country, but in New England, at least, they are seldom satisfactory and can not compare with the shallow wells drawing water from sandy or gravelly strata at a not very great distance beneath the surface.

Where the area of sandy or gravelly soil is not extensive and the quantity of water to be obtained from it limited, there are several ways of increasing the supply. If the water-bearing material is found in the vicinity of a pond or stream, the yield of the wells can be increased by infiltration from the neighboring surface-water source if the wells or filter galleries are properly placed. It is also possible to increase greatly the yield from the ground by flooding areas in the vicinity of the wells with water from some surface source. These are things which should be done intelligently, since trouble is apt to occur if surface water enters the wells too rapidly and is imperfectly purified.

Ground-water supplies have been in use for many years, but there are many places where the water-supply problem could be solved very satisfactorily if these sources of supply were better understood. It has been unfortunate that such supplies have been developed by well drivers rather than by engineers. The selection of a ground-water supply by a well driver is much the same as the regulation of plumbing by plumbers as practiced in many of our cities.

Where ground waters can not be obtained, the most satisfactory substitute to meet the modern demands for a water not only free from pollution but free from other objectionable characteristics is a filtered surface water, and the time is not far distant when all surface waters will be filtered before being delivered to the consumers. It is now possible to make almost any water suitable for domestic use by applying the proper treatment, but there is a tendency to think that because any water can be made suitable for domestic purposes any water will do as a source of supply, providing it is filtered. In fact, the advisability of neglecting the sources of supply and filtering the water is being publicly advocated in some places. This, it seems to me, is a very dangerous tendency.

Certain of the dangers attending the use of a polluted water supply after filtration are obvious. We need only recall the recent epidemic of typhoid fever in Butler, Pa., where a large percentage of the population was stricken with typhoid fever on account of the temporary shutting down of the filtration plant while making necessary repairs. Other examples of perhaps less serious character have occurred which show on how slender a thread the health of a community hangs which depends for its water supply on the proper operation of a filtration plant managed frequently by ignorant workmen.

There are some cases in which it is necessary to use water which has been polluted, and in such places the only safeguards are in properly designed works so constructed as to make it difficult to operate them improperly and in the operation of the works by competent and trustworthy men.

Surface water sources can be greatly improved in many cases without filtration. The most effective method is by storage for a considerable time in a deep pond or reservoir, with bottom and shores free from loam and mud or other organic matter. It water could be stored for a sufficient time and under proper conditions all disease germs would be killed, the water would become colorless and in every respect excellent for domestic purposes.

The water found in such lakes as Winnepesaukee in New Hampshire is at most times an almost perfect water, notwithstanding the fact that many of the tributary streams contribute water of very inferior quality. I say at most times, for all such waters are subject to objectionable tastes and odors. The conditions in Lake

Winnepesaukee can be approximated artificially and some of the reservoirs recently constructed, like the Wachuset reservoir of the Metropolitan water works in Massachusetts are giving water of most excellent quality, although the water entering theim is highly colored and contains large quantities of organic matter.

The best evidence we can have of the safety in the use of such waters is the fact that our large cities, like Boston and New York, which are supplied from storage reservoirs, never have an epidemic of typhoid fever which can be attributed to the water supply, although the feeders of the reservoirs are known to be polluted. The weak points about such supplies are the possibilities of local contamination which may quickly reach the point from which water is drawn and the occasional troubles from tastes and odors due to growths of organisms.

Running streams are the least desirable sources of supply and I do not believe there is any stream, accessible for water supply purposes, which can be considered a safe source from which to take water directly. Although there may be no permanent sources of pollution on the watershed, it is absolutely impossible to prevent access to the stream, and when we consider that any pollution entering the stream at any time is almost immediately taken into the distributing pipes of the water supply system, the danger is obvious. Such supplies, if used at all, should invariably be filtered.

Experience is showing us that the nearer we get to nature, either in disposing of sewage or in obtaining a water supply, the better the results secured. The old-fashioned cesspool which has been so much abused is now considered the best method of disposing of small quantities of sewage. In methods of water purification the most satisfactory are those where nature is assisted as little as possible. The addition of chemicals or the construction of works which require constant personal attention, while frequently necessary, should be adopted only as a last resort.

FILTRATION OF PUBLIC WATER SUPPLIES.*

HARRY W. CLARK.
BOSTON.

The purification of municipal water supplies by filtration has been practiced for over seventy years. Apparently the first filter of considerable size was that constructed by the city of London in 1829, and that city now has about 120 acres of sand filter beds. Berlin, Germany, built water works and sand filters in 1856, fifty years ago, and at the present time practically all the important cities of Great Britain and Germany filter their water supply if this water is taken from a surface source. Filtration of public supplies is widely practiced in other countries, especially Belgium and Holland. Even Russia has several large municipal filters; a recent article in the *Engineering Record* describes large sand filtration plants in Japan, while in India and Egypt a number of large municipal supplies are treated by mechanical filters.

The first large municipal filter in America was constructed at Lawrence, Mass., in 1892-93, although at Poughkeepsie and Hudson, N. Y., St. Johnsbury, Vt., and Nantucket, Mass., small filters had been previously built, the first one being that at Poughkeepsie, N. Y., constructed in 1872. During the last half of the last century public water supplies in America increased greatly in number, but perhaps the true beginning of the modern desire for pure water in this country, in distinction from the desire for enough water, was given by the State Board of Health of Massachusetts in 1886, when systematic examinations of the water supplies of the state were begun, frequent analyses of these supplies made and the Lawrence Experiment Station established.

Filtration of water is resorted to for various causes: To remove disease germs and render a polluted water safe, to remove undesirable organic or mineral matter present in suspension in water and thus improve its appearance, to remove color and to remove tastes and odors and the organisms causing these tastes and odors.

The first municipal filters were constructed for the purpose of improving the appearance of public supplies, and for many years the removal of organic and mineral matter in suspension in the water was believed to be the chief benefit of filtration. Studies showing the efficiency of sand filters in removing bacteria from water were begun in Berlin in 1884 and since that date the water supply of the city of Berlin has been systematically examined bacterially, and since 1888 constant bacterial examinations of the water supplies of London have been made. In 1887 the Massachusetts State Board of Health began at the Lawrence Experiment Station its investigations on the filtration of water and the purification of sewage, and since then notable studies of the science of water filtration have been made by various municipalities in this country. At Lawrence the studies for many years were directed entirely to what is known as slow sand filtration, but of late years other methods have been studied at Lawrence and mechanical and other forms of water filters have been operated. The improvement of water by double filtration has also been extensively studied there.

The municipal studies in America have been directed almost entirely to determining the comparative efficiency and applicability of sand and mechanical filters in the treatment of the various kinds of water necessary to use in various sections of the country, together with studies of sedimentation, coagulation by different coagulants, etc. In the Lawrence studies more than seventy-five experimental water filters have been kept in operation for periods varying from a few months to fourteen years, and with the laboratory facilities of the station almost every conceivable determination of the efficiency of these filters has been made. Daily determinations of the bacteria in the raw and filtered water and chemical analyses to show the work of the filters in removing color, organic matter, etc., have been made; the effect on filter efficiency of different rates of operation, different depths of filter and filter efficiency when treating different waters have all been exhaustively studied and the results given from year to year in the Lawrence Experiment Station reports.

Since the Lawrence filter was built in 1893 sand filters have been constructed at Mt. Vernon, Albany, Providence, Philadelphia, Washington, Yonkers, New Haven, Springfield, Bar Harbor and other places, and such filters are in process of construction at Pittsburg, Pa., Cincinnati, Ohio, and South Norwalk, Conn. Investigations are also under way looking to the filtration of the old and new water supplies of the city of New York.

Mechanical filters began to be extensively used in America, especially throughout the south and west, in

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the latter part of the 80's, largely, however, for the purpose of clarifying river water rather than for bacterial purification. In 1904 it was estimated by Hazen that 560,000 people in America were supplied with sand filtered water and 3,000,000 with water treated by mechanical filters. In the past three years, owing to the introduction of sand filters at Washington, Philadelphia, Providence and other places, the number of people supplied with sand filtered water has more than tripled, so that at the present time about 2,000,000 people in this country are so supplied.

The government has recently constructed covered sand filters of twenty-nine acres in area at Washington, these filters having a capacity of 75,000,000 gallons daily. Filter beds twenty-two acres in area supplying 288,000 people, have recently been constructed in Philadelphia and fifty acres are in course of construction, while at Pittsburg forty-six acres of filter beds to supply a population of 400,000 are being constructed and will be completed probably during 1908. The introduction of mechanical filters constructed on a scientific basis has also gone forward with great rapidity during the past few years and probably 1,000,000 more people are supplied with water purified in this way than were supplied in 1904. The filters at Little Falls and Hackensack, N. J., are the largest of this type of filter yet constructed.

A sand filter is a very simply constructed affair. It is in its essential features merely a body of sand of sufficient thickness, underlaid or supported on a few inches of coarse and fine gravel or broken stone, with a proper number of pipe underdrains to collect the water that passes down through the sand, the filtering material enclosed by a suitably constructed concrete masonry basin with tight bottom and sides and in the northern states covered with a roof. These are its essential features of construction, but the details can be varied through wide limits and by the engineering skill of those engaged in planning and building filters; they are being constantly improved, these improvements tending to simplify filter operation, to promote constant efficiency and to reduce the cost of filtration.

Such sand as that in the Lawrence filter will, when first placed in position, allow 50,000,000 gallons of water daily to flow through one acre of surface area; such sand as in the Albany filter will, theoretically, allow under the same conditions about twice as much water to pass through. As the sand remains in position and in constant use, however, it becomes compacted and its maximum rate decreases very materially, so that under the same conditions of head, free underdrains, clean surface, etc., the maximum rate of the filter may be only one-half or one-fourth as great as when first put in use. During the past two or three winters the volume of water that could be made to pass through the Lawrence municipal filter decreased so materially, owing to compactness of the sand due to use and continued water pressure, that it has been a serious problem to filter a volume sufficient for the city's needs. An experimental filter at the experiment station, of the same grade of sand as in the municipal filter and of the same age of operation, has shown similar results as to decreased capacity to flow.

The maximum rate at which a filter may be operated has little connection, however, with the actual rate necessary for bacterial efficiency. In Germany the official rate of filtration recognized by the imperial board of health is 2.57 million gallons per acre daily. The experiments at Lawrence and elsewhere in this country, however, have shown what common sense would tell us, that the rate of filtration may vary very materially with the character and degree of pollution of the raw water. Lawrence experiments make it clear that under careful supervision badly polluted water can be filtered at rates as high as 3,000,000 to 4,000,000 gallons per acre daily with entirely satisfactory results and that with ordinary river and reservoir waters, not grossly polluted, rates of 5,000,000 gallons per acre daily can be safely followed. A sand filter containing from three and one-half to five feet in depth of suitable sand and filtering polluted water at the rates mentioned, is capable, under proper conditions of filtration and skilled operation, of removing 99 per cent. or more of the bacteria present in the applied water and a considerably larger percentage of the bacteria of intestinal origin present in such water.

For nineteen years experimental sand filters have been in operation at the Lawrence Experiment Station. For fourteen years the Lawrence municipal filter has been in use and the Albany filter plant since 1899. Daily records of the bacterial efficiency of the Lawrence filter and the Albany filter show that by proper supervision a thoroughly satisfactory effluent from a bacterial point of view can be obtained at the rates followed at these places. Constant chemical analyses show, moreover, that organic matter can be reduced about 50 per cent. and coloring matter from 20 to 40 per cent. when filtering such river water as passes to these two filters. It has been found that not once has the average yearly efficiency of the Lawrence filter fallen below 98.5 per cent., and that during the past eight years it has been about 99.5 per cent. The Albany figures on the table show a similar result.

In the operation of sand filters a certain amount of sand clogged with organic and mineral matter has to be removed from the surface every little while in order that the filter may be kept in operation and the required rate of filtration and volume of filtered water be obtained. At Albany the period between scrapings averages about twenty-five days and at Lawrence practically the same period elapses. At each scraping about one-half inch of clogged sand is removed, although when the laborers employed in this work are skilful a lesser depth is taken away at each scraping, the depth that must be removed varying, of course, with the character of the matter in and removed from the raw water; for example, the Potomac river water passing to Washington filters contains fine clay particles that penetrate to a considerable depth below the surface and cause deeper sand removal than necessary at Lawrence or at Albany, while a filter receiving lake water free from turbidity would need even less sand removal than the Lawrence and Albany filters. The sand removed is subsequently washed and replaced. Replacement of sand is usually carried out once or twice each year and at this time the filters are filled to grade with new or washed sand. At the present time sand is removed from filter beds by water pressure, that is, a movable hopper connected with pipe or hose is placed on the filter and moved about from place to place and the sand that has been scraped from the filter surface and heaped up is shoveled into it. A stream of water passes through the bottom of this hopper, carries the sand into a pipe and through this to the washing area. According to Lawrence and Albany figures, the cost of filtration exclusive of interest on plant is about $1.50 per million gallons of water filtered. This includes scrap-

ing, ejection of sand, washing of sand, replacement of sand and general care of the filter beds. At Washington by improved methods and machinery the cost is stated to be only about one-third of this, or 50 cents per million gallons. Including interest on cost of plant and depreciation, the cost of sand filtered water averages about $10 per million gallons filtered.

The first scientific work in this country on water filtration was that in Massachusetts, where the comparatively clear river water of the eastern states was experimented with. It was found that such waters, polluted by considerable amounts of organic matter and containing the dangerous bacteria from the sewage of cities along their course, could be successfully and comparatively cheaply treated by sand filtration. When the studies were begun at Louisville, Cincinnati and elsewhere on the turbid waters of the central and western states, carrying at times of flood large amounts of clay and silt in suspension, it was found that sand filters were but poorly adapted to the filtration of these turbid waters without extensive preliminary treatments of such waters. Bacterially they could be made about as efficient as in the east, but, owing to the large amount of matter in suspension in these waters and the fineness of many of the particles of this matter, sand filters would quickly clog and the effluents produced were not of a satisfactory quality as regards freedom from matters in suspension. It was also found that it was not economical even with mechanical filters to treat the western river waters directly, but that large sedimentation basins capable of holding from one to many days' supply of water were necessary, and the addition of coagulants in different amounts at different times before filtration, varying with the character of the water treated. It was found, however, that a purification system suitably planned, consisting of sedimentation basins, apparatus for the introduction of coagulants and properly constructed mechanical filters, was capable not only of producing satisfactory effluents from a bacterial point of view but also effluents of a satisfactory clearness and freedom from color.

The simplest form of mechanical filter used in paper mills and elsewhere where a clarified water is desired is a large wooden tub with a couple of feet of sand in its bottom over underdrains and strainers and supplied with mechanical devices by which the sand can be agitated and washed in position by reversing the current of water and passing it up through the sand. In connection with such filters in mills a coagulant, such as sulphate of alumina, is often used, but often also the water is simply strained by the sand at a very high rate without the use of a coagulant. Early forms of mechanical filters employed such filtering materials as charcoal, coke, etc., and water was in some instances passed through under pressure from the city mains. The coagulant, sulphate of alumina, when introduced into an alkaline water decomposes and the gelatinous hydrate of alumina is formed which gathers in aggregates the organic matter, suspended mineral water and bacteria of the raw water, and, by the formation of these aggregates and their subsequent entanglement and collection at the filter surface, forms a most excellent body for the retention of bacteria and organic matter. By the use of a coagulant and this formation, and the use of coarse sand, rates of 75,000,000 to 125,000,000 gallons per acre daily can be maintained.

From the first crude type of mechanical filter, through the experience of those engaged commercially in installing filter plants, and also as a result of the able investigations carried on at Louisville, Pittsburg, Cincinnati and other places by experts in water purification, a new type of filter has been evolved. This new type is a combination of a mechanical and sand filter, although, of course, much nearer the mechanical filter form. The chief change, however, as typified by those recently constructed, is that it is built of practically indestructible materials, concrete or re-enforced concrete, instead of the perishable wooden forms formerly employed. The sand beds are considerably larger than the old wooden tub mechanical filters, but still small compared with the beds of slow sand filters. Improved devices for the even passage and collection of water after passing through the sand have been devised and also better and more efficient methods of washing the sand. Filters of this new and improved type have been installed at Little Falls and Hackensack, N. J., at Ithaca and Watertown, N. Y., Louisville, Ky., Harrisburg, Pa., and are being planned for other places. At Little Falls, N. J., the first large plant of this new and improved type was constructed and put into operation in 1902. This plant is designed to have a capacity of 32,000,000 gallons daily and covers a total area of only about 1¼ acres. It has 32 individual filter beds of 360 square feet each, a coagulating and subsiding basin with a capacity of 1,750,000 gallons and a clear water basin of 3½ million gallons capacity. The filters are constructed above the clear water basin. The water filtered is taken from the Passaic River and is a water somewhat dirty in appearance, not highly polluted, but unsatisfactory for domestic use on account of its appearance and the matters in suspension in it.

Sulphate of alumina is used as a coagulant in amounts averaging about 1.3 grains per gallon, and in order to supply sufficient alkalinity to cause good decomposition and coagulation and prevent the passage of undecomposed alum into the effluent, soda ash is used in amounts averaging about ½ grain per gallon. These filters contain 2½ feet in depth of sand of an effective size varying from .35 to .40 mm., placed over fine gravel or broken quartz and this resting on the filter floors in which are inserted the strainers. In washing the sand in these filters, water is passed up from below and the sand agitated by compressed air instead of by the stirring rakes formerly employed. The dirty wash water flows away through the inlet pipe to which a branch is attached leading into the sewer. The rate of filtration employed is 125,000,000 gallons per acre daily. This filter removes more than 98 per cent. of the bacteria in the applied water, about 85 per cent. of the coloring matter, about 40 per cent. of the organic matter determined as albuminoid ammonia, and a much greater percentage of the total organic matter. It lowers the temporary but increases the permanent hardness of this water about 40 per cent.

When a slow sand filter is first put into operation the water comes through almost unchanged, and before good filtration—that is, good bacterial efficiency—can be obtained, the sand grains, especially those near the surface of the filter, must be covered with films of organic matter and this organic matter be filled with the bacterial life which is capable of entangling and destroying the ordinary water bacteria and disease germs present in the raw water. That is, sand filtration is not entirely mechanical straining, but largely a bacterial process of water purification.

With the ordinary New England waters several weeks are necessary for this process of biologic construction to

be established. With a clear water containing little matter in suspension, a longer period even is necessary and finer sand in the filter is of advantage. When the filter has by this biologic construction become a proper medium for the efficient filtration of water, it not only removes bacteria but also improves the appearance of the water. It will also remove from ordinary river and pond waters a large part of the odor and tastes present in these waters. At the low rates at which sand filters are operated, this biologic purification is the efficient agent by which disease germs and organic matter are removed. In mechanical filtration where rates 30 to 50 times as great as ordinary sand filter rates are used, this natural purifying agency is much less efficient and the removal of bacteria depends very largely on the coagulant used, and the flocculent precipitate formed by it, which entangles the bacteria. In sand filters at a 3,000,000 gallon per acre per day rate, the water passes downward through the sand at a rate of about 4.5 inches in depth per hour, but in mechanical filters operated at a rate of 120,000,000 gallons per acre daily the water passes downward at a rate of practically 180 inches per hour.

I have stated that the actual cost of operation at Lawrence and Albany is about $1.50 per million gallons filtered. I understand that at Little Falls, N. J., it amounts to slightly more than $3 per million gallons filtered exclusive of cost of filtered water used in washing the filters, and the water used in this way amounts to about 4 per cent. of the total effluent.

In connection with this, however, it must be stated that, while the operation of mechanical filters in which coagulants are used is more expensive per million gallons filtered than sand filtration, yet when the smaller cost of the mechanical filter plant is taken into consideration, the actual cost of each method of filtration, including interest on plant, etc., is ordinarily about the same per million gallons of filtered water obtained.

The efficiency of a mechanical filter depends almost entirely on invariably applying a correct amount of coagulant for the water being treated, however much it may vary from hour to hour and in a suitable period for the decomposition of the chemical coagulant and for sedimentation before the water passes to the filter. In slow sand filtration the changes of the water and the personal equation are not such important factors, as the sand filter operating at a low rate adapts itself more readily to changes in the character of the raw water, receives no coagulant and its efficiency rests on natural rather than chemical means. It is, of course, true that on this account a slow sand filter is more easily worked by unskilled hands and better results obtained than when a mechanical filter is operated by those insufficiently trained to appreciate the necessity of constant care and attention. This gives a certain percentage of safety to the slow sand filter. A decrease of filter efficiency even for a few minutes may, of course, be of serious moment when treating a polluted water, and especially if these few minutes occur several times in the course of a day or of a week. It is the aim at the present time of those planning mechanical filters of the modified type, used for the purification of public supplies, to so construct them that failures are almost impossible. Constant examination of the raw water and effluent is also insisted on. It is undoubtedly true that, with expert supervision, a mechanical filter of the latest design is capable of giving a bacterial efficiency nearly equal to, but probably not quite as great as, that obtained by sand filters. Whether this very slight difference in efficiency is of any hygienic importance or not yet remains to be demonstrated.

I have collected some data bearing on this phase of the water filtration problem, the results covering thirteen different experimental filters and two large filtration systems. In every case the period that I have selected for comparison of these filters has been such that each, as far as I can determine, was being operated under normal conditions and all analytical results obtained during this period are included in this comparison. From the figures obtained it will readily be seen that the efficiency of all these filters was at times lower than the normal and desired efficiency. Taking the results of the two types of filters collectively, the slow sand filters had an efficiency of over 99 per cent. 42 per cent. of the time, of over 98 per cent. 64 per cent. of the time, and below 95 per cent. 13 per cent. of the time; while the mechanical filters had an efficiency of over 99 per cent. 32 per cent. of the time, of over 98 per cent. 49 per cent. of the time, and less than 95 per cent. 28 per cent. of the time. The filters used in this comparison are the Lawrence city filter, the Little Falls filter and experimental mechanical and sand filters at Lawrence, Washington, Cincinnati, Pittsburg and New Orleans.

Finally, the chief test of the efficiency and value of filtration is the effect that filtered water has on the health of a community using such water compared with the health of the same community when using polluted water before the introduction of filters, or, of course, it can be shown also by comparison between communities using purified water and those still using polluted water. Unfortunately, few results are obtainable showing the direct effect on the health of a city of mechanically or chemically filtered water, while we have, on the other hand, many illustrations, especially abroad, of the hygienic efficiency of slow sand filtration and in this country the results of years of operation of the Lawrence filter and Albany filter. The Lawrence results have been related so frequently that many of you are familiar with them, but, as they are as yet the foremost American exemplification of the value of sand filtered water, they must be repeated here.

The water works of the city of Lawrence were built in 1875, water being taken from the Merrimac River, and soon after their introduction the number of deaths from typhoid fever in the city began to increase. It was finally recognized in the last of the '80s that whenever there was an epidemic of typhoid fever in Lowell, which occurred practically every year, there was also an epidemic of typhoid fever in Lawrence, the city of Lowell, with its present population of 100,000 people, being located about nine miles up the river from the intake of the Lawrence water works and all its sewage passing into the Merrimac. Investigations showed that infection from Lowell reached Lawrence and was distributed throughout the Lawrence water supply system, and this investigation resulted in the construction of the Lawrence filter in 1892 and 1893.

In the tables given showing the growth of the city of Lawrence in population, the total number of deaths in the city, year by year, is also shown and the total number of deaths from typhoid fever before and after the construction of this filter. It will be seen from this table (Table 1) that the greatest number of deaths from typhoid fever in the city, namely, 60, occurred in 1890, when the population of the city was less than 45,000; that in 1892, the year before the construction of the

filter, the total number of typhoid deaths was 50, the city having in that year a population of about 48,000; in 1894, the first year that filtered water was supplied to the city, the number of deaths from typhoid decreased to 24 (more than in any subsequent year to date, as shown by the table), and the total deaths in the city decreased more than 300, or from 1,211 to 901. In 1906 the total number of deaths was 1,330, an increase of 9.8 per cent., and the population of the city was 76,000, an increase of about 75 per cent. The total number of deaths from typhoid fever in 1906 was 15, as against 50 in 1892, making the comparative death rate from typhoid fever as follows: In 1892, 111 per 100,000, and in 1906, 20 per 100,000, or a decrease of 83 per cent. The rates for the intervening years are shown on the table. In Albany the reduction was from an average of 71.5 deaths per year from typhoid for the nine years preceding the building of the filter to an average of 23.8 for the six years following construction. The reduction in the number of cases of typhoid in Albany was from an average of 424.8 cases per year for the nine years preceding the building of the filter to an average of 100.5 for the six years following construction. The total deaths also decreased very remarkably as at Lawrence.

TABLE 1.

VITAL STATISTICS, LAWRENCE, MASS., 1888 TO 1906, INCLUSIVE.

Year.	Total number of deaths from typhoid fever.	Typhoid death rate, 100,000 of population.	Total deaths.	Population.
1888	48	120.0	....	43,100
1889	55	127.5	1122	43,800
1890	60	133.3	1191	44,700
1891	55	122.0	1136	46,200
1892	50	111.1	1211	47,700
1893	39	86.6	1171	49,200
1894	24	50.0	901	50,700
1895	16	30.7	993	52,200
1896	10	18.6	1017	54,300
1897	9	16.2	1087	56,400
1898	11	18.8	1057	58,500
1899	20	33.1	1234	60,500
1900	11	17.6	1250	62,500
1901	12	18.5	1118	64,700
1902	11	16.5	1163	66,800
1903	22	31.9	1178	68,900
1904	10	14.1	1140	71,000
1905	14	19.0	1372	73,500
1906	15	19.6	1330	76,400

TABLE 2.

NUMBER OF DEATHS FROM TYPHOID FEVER REPORTED IN ALBANY DURING THE NINE YEARS BEFORE AND SIX YEARS SINCE THE STARTING OF THE FILTER PLANT.[1]

Deaths from Typhoid Before Filter Plant was Started.		Deaths from Typhoid After Filter Plant was Started.	
1890-1	97	1899-1900	39
1891-2	38	1900-1	27
1892-3	45	1901-2	19
1893-4	47	1902-3	22
1894-5	98	1903-4	24
1895-6	85	1904-5	12
1896-7	65		
1897-8	84		
1898-9	84		

While, as I have stated, the actual hygienic efficiency of modern mechanical filters has not been as yet adequately demonstrated, yet such efficiency is, I believe, undoubtedly obtained and will be demonstrated eventually. There is a place for each type of filter. Sand filters are successful with polluted but comparatively clear waters and with the addition of sedimentation basins and the occasional use of coagulants with waters somewhat turbid. At the present time, however, no method of satisfactorily handling the very turbid waters full of clay and other matters in suspension is known other than by the use of coagulants and mechanical filters, although sedimentation and double sand filtration is of much promise. The prejudice in some minds against the use of aluminum sulphate under proper supervision is, I believe, not justified; the aluminum hydrate formed is invariably removed by the filters if they are successfully operated. We might, perhaps, as well refuse to eat many common foods because in their production chemicals are used as to object to water clarified by coagulants. The public is beginning to demand a clean water of good appearance, as well as safe, and in order to obtain such a water coagulants are sometimes necessary. Before either type of filter is adopted, thorough preliminary studies of all the local conditions as to water supply, etc., should be made and hasty and inexpert conclusions prevented.

1. Compiled from records of Bureau of Health and State Board of Health.

TABLE 3.

NUMBER OF DEATHS FROM TYPHOID FEVER AND RATE PER 100,000 POPULATION IN ALBANY AND NEIGHBORING CITIES.[2]

	Albany.	Cohoes.	Troy.	Watervliet.	Schenectady.	Rensselaer.
Population	100,000	24,000	75,000	14,300	56,000	10,000
Number of deaths yearly from typhoid	12	13	32	6	11	5
Rate per 100,000.	12	54	43	42	20	50

THE PELVIC ARTICULATIONS.

A CONSIDERATION OF THEIR ANATOMIC, PHYSIOLOGIC, OBSTETRIC AND GENERAL SURGICAL IMPORTANCE.*

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The first paper on this subject was published by me in conjunction with Dr. Robert B. Osgood[1] in May, 1905. A second paper now seems justified, since as the result of a larger experience many features of the subject are better understood, and it is possible to write with greater definiteness than was the case two years ago.

In the first place, in the consideration of the subject, it is to be remembered that the pelvic articulations are true joints and that in normal health, entirely irrespective of age or sex, motion is a definite part of their function. In the next place, it should be remembered that because of the character of these articulations, being flat bone surfaces brought together with oblique or vertical axes, their stability is dependent on the tone and character of the muscles and ligaments. This being the case, and it being recognized that all of the strong trunk and abdominal muscles, as well as the muscles involved in the movements of the thighs, are attached to the pelvic girdle, it is evident that anything that interferes with the stability of the pelvis, or that which represents the structural base, must interfere with the normal use and development of the muscles attached to it. The converse of this is equally true, and anything that interferes with the normal use or development of the muscles in this region must result in weakness and lack of stability in these joints, so that after the condition has once started a vicious circle exists, the full significance of which must be recognized if the various features are to be understood and the appropriate treatment given. This, together with the effect which the unstable pelvis, associated with the weakened trunk muscles, must have on the support and function of many of the abdominal organs, is to be recognized, and should, it seems to me, be given special emphasis in a paper presented before this Association.

2. From monthly bulletins of State Department of Health.

* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

1. Boston Medical and Surgical Journal, May, 1905.

ANATOMIC CONSIDERATIONS.

From the anatomic point of view the joint between the pubic bones is vertical in its axis, the bone surfaces are narrow, and the muscles are so placed that they can give but little direct support, while the ligaments are such that great strength or stability is impossible. It is well known, as was shown in the previous article, that the pubic bones are frequently entirely absent, and that full activity, even to uncomplicated pregnancy, is possible under such conditions. On the other hand, the joints between the sacrum and ilia are broad and flat, with strong ligaments and muscular attachments, so that in their anatomic formation strength is at once apparent. The axes of these joints are oblique, in two directions inclining upward and outward, as well as forward and outward, a fact that naturally adds strength, but which is also of much importance from an obstetric point of view. It is evident from a thorough study of these joints that the stability of the pelvic girdle depends almost entirely on them and that motion at the pubes is practically impossible except as there is relaxation or motion at the back. The motions which are normal and which should exist at all ages and in either sex, unless some pathologic condition or congenital defect be present, consist at the pubic articulation in simply an up-and-down play, this being markedly exaggerated in certain physiologic conditions, but only as there is a corresponding exaggeration at the sacroiliac joints. In these latter joints the normal motion consists in the tilting of the sacrum on the ilia (or the ilia on the sacrum), the motion taking place on a transverse axis situated about in the middle of the sacrum. Because of the position of this axis it is obvious that as the upper part of the sacrum moves forward the lower part moves backward, and vice versa.

PHYSIOLOGIC CONSIDERATIONS.

The effects of certain physiologic conditions on these articulations is of importance. In pregnancy a definite, and commonly a measurable, relaxation takes place as a normal feature, and while this becomes more marked toward the end of the term, it may nevertheless be present during the entire period and be so marked as to cause great disability.

Not only is this true, but there is probably a physiologic relaxation at every menstrual period, which from a physiologic point of view represents a miniature pregnancy. This is naturally not very marked under ordinary conditions, but it may be enough to cause considerable disability as well as explain many of the backaches common at that time. The relaxation is certainly definite enough to justify the more careful avoidance, at such times, of those activities that would cause strain of these articulations, than would be necessary under other conditions.

Not only should these two conditions, that of the relaxation in connection with pregnancy and with menstruation, be recognized, but it is probable, after the study of a considerable number of cases in connection with the gynecologists, that any disease of the pelvic organs in which there is much circulatory disturbance may be followed by this same reflex relaxation of the pelvic joints.

While this is probably true, the converse of this is also true, that if the pelvic joints become relaxed as the result of accident or disease, the lack of stability of the pelvic girdle, with the resulting weakening of the support of the pelvic organs, leads to congestive disturbances in these organs, and as this in turn probably acts on the joints, there exists, until the proper treatment can be instituted, a vicious circle of cause and effect.

OBSTETRIC CONSIDERATIONS.

From the obstetric point of view the pelvic joints are of importance, and recognizing that there is motion in these joints and that during pregnancy this motion is increased, a knowledge of the character of the motion is desirable.

The most important feature is the tilting or movement of the sacrum on the ilia (or the ilia on the sacrum), and because of the double obliquity of the axes of the joints between these bones, it is necessary, if the sacrum is moved backward at the top, that not only should the antero posterior diameter at the brim of the pelvis be increased, but the lateral diameter must also be increased. As, however, all of these motions are made on the transverse axis through the middle of the sacrum, it is necessary that, as the bones are moved in such a way that the diameters at the brim of the pelvis are enlarged, the diameters at the lower portion, or the outlet of the pelvis, must at the same time be reduced. If this motion be reversed so that the sacrum moves forward at the top the diameters at the brim are all narrowed, while those at the outlet are correspondingly increased.

The importance of the possibility of modifying these diameters is at once apparent, and the ease with which this can be accomplished should be understood. Pressure on the end of the sacrum forces the lower part of this bone forward, thus narrowing the diameters below, but enlarging those above. Pressure over the base of the sacrum or over the low lumbar spine forces the sacrum forward, thus narrowing the diameters above, while at the same time enlarging them below. Under ordinary conditions the amount of pressure necessary to accomplish this is easily compatible with that which could be borne by the patient and which could be applied by the accoucheur.

It is still further to be remembered that as all of the trunk and abdominal muscles are attached to the pelvis, these muscles can be of little assistance at the time of delivery if the pelvic relaxation is much in excess of normal unless some support is applied that will prevent this undue motion and make the basal attachment of these muscles secure. To accomplish this a belt carried around the body over the trochanters and sides of the ilia is the simplest and most practical form of support.

GENERAL CONSIDERATIONS.

When once it is recognized, in the consideration of the pelvic articulations, that we are dealing with true joints, it is evident that they are liable to the same disease conditions as are the other joints. That a tuberculous process may be present has long been recognized; but beside this, any of the non-tuberculous affections, the infectious arthritis, the atrophic arthritis, the hypertrophic arthritis, or the malignant diseases, may be present, the symptoms depending on the special disease present in the given case.

Not only are these articulations liable to disease, but because of their character, they are more liable to injury than any of the other articulations. Their obliquity, the lack of bony projections or formations that would tend to prevent strain or injury, such as the shape of the acetabulum in the hip joint, both emphasize the fact that the stability of the pelvis depends almost en-

tirely on the ligaments and muscles. This being the case, anything that leads to loss in the tone of these structures renders the joints more liable to strain, and explains the frequency with which these conditions are met.

The simplest type of trouble consists of the strains of the sacroiliac joints which result from postures such as stooping, standing, lying, or sitting. In stooping, the muscles at first protect the joints, but as they tire, the support is then thrown on the ligaments, and if continued leads to sufficient strain of these structures to produce discomfort. This is usually instinctively relieved by stretching, in the act of which the lumbar spine is drawn forward or hyperextended, and the sacrum, moving with the spine, is drawn into its normal position, and the strain relieved.

In long standing the joint strain is similarly produced, except that the line of strain is downward, and is relieved by change of position, in which other muscles are used. On lying down in the supine position, or dorsal decubitus, strain of these joints is also possible, the spinal muscles soon tire, and as they relax the lumbar spine sags. With this downward movement of the spine the upper part of the sacrum is drawn downward also, the movement with reference to the pelvis being backward at the top or base and forward at the tip. If this position is continued for any length of time the drag on the ligaments results in distinct strain, with the common backache. This is naturally seen most markedly where, as the result of the large size of the buttocks or other physical peculiarities, the amount of depression of the spine, with the consequent drag on the sacroiliac ligaments, is greater than the average. It is also more marked when for any reason the support and protection of the muscles is more completely eliminated than is usual with simple recumbency. In this way the common postoperative backache is to be explained, the complete relaxation of the muscles from the anesthesia allowing the maximum amount of sag, together with the fact that at such times the patient usually lies on a hard, unyielding table, without opportunity for the buttocks to settle into it as they do, in varying degrees, into the mattress or surface of the ordinary bed. It is also in this way that the troublesome backaches occurring in connection with the acute sicknesses are to be explained, where as the result of the general disease the muscles are more relaxed than normal, while at the same time the position is commonly on the back.

A similar condition of strain results from long sitting, especially if the body is not held reasonably erect. The common lounging attitude in sitting, if continued, results in strain entirely similar to that seen in recumbency, and explains the backache seen under these conditions, especially common after long car journeys, the common car seat predisposing to such attitudes, while the few opportunities for change of position assist in favoring this strain.

In all of these conditions which have been described the symptoms are due simply to strain of the joint structures. No actual injury has taken place, and as soon as the position of strain is corrected the symptoms disappear. If, however, the position of strain is continued, the ligaments either give way, allowing the bones to become misplaced, causing a true sprain, or gradually become relaxed, producing greater instability of the joints, with or without misplacement of the bones, but always causing weakness and instability. In this latter type the condition can best be described as a chronic strain.

Of these two types, the first is most often seen in the so-called "stitch" or crick in the back, coming on after long stooping or standing in awkward positions, or in lifting or straining, especially where the load is suddenly increased. Under these conditions the sharp, sudden pain, usually referred to the lower part of the back and frequently definitely to one of the sacroiliac articulations, is due to the rupture of some of the ligaments of these joints, and as this allows a greater range of motion than is normal, a partial luxation at times results. In this there is, of course, very rarely an entire separation of the apposing articular surfaces, a complete dislocation, but the bones slip enough so that their normal relation is disturbed, with a corresponding disturbance in the normal function of the part. Frequently this is corrected simply by the muscular effort in assuming the erect position, but at other times the irregularities which form the surface of the articulation are caught in the irregularities of the surface of the apposing bone, and voluntary correction becomes impossible.

Because of the character of these articulations it is evident that if one joint is injured each of the other joints must be somewhat strained, so that the disability resulting from even a slight luxation of one of the sacroiliac joints at times is very great. The attachment of the thigh and trunk muscles to the pelvic bones explains the great disability that may result from such an injury.

In such an injury not only are the joint structures injured or strained, but the large nerve trunks which cross this articulation in front are frequently strained or irritated with resulting symptoms. Anatomically the sacral plexus with some of the branches from the lumbar plexus cross just in front of the synchondroses, and this being the case, it is not difficult to understand the fact that irritation of these nerves is possible. The symptoms resulting from such irritation naturally vary, depending on the special nerve irritated and the degree of irritation, but it must be remembered that the pain or disturbed sensation will be referred to the distribution of the nerve irritated and not to the seat of the injury. In this way the so-called referred pains, the areas of anesthesia or hyperesthesia so often seen, or the obstinate sciaticas, are to be explained, and the hopelessness of treatment applied to the seat of the pain is evident.

The displacement most often seen is backward of the upper portion of the sacrum on the ilium. In the acute injuries or disease conditions this is usually seen only on one side, while the chronic strains or the cases in which there is long-standing relaxation the displacement is usually on both sides, resulting in the flat back seen commonly in these cases. With the acute cases, while the usual displacement is of the sacrum backward, the reverse of this is possible, the upper part of the sacrum being drawn forward on the ilium. It is also probable that in rare instances, especially as the result of falls from heights striking on the feet, that the sacrum is forced downward, so that the ilium is made actually higher, with the apparent shortening of the leg. It is in these cases of injury or of disease on one side that the lateral deviations of the trunk are seen. It is also in these one-sided lesions in which the referred pains are met most frequently. In the chronic relaxations apparently the changes take place so slowly that the nerve trunks become adjusted to the changes as they

take place, so that referred pains are less common. It is to be remembered that the displacement of the bones which results in this nerve irritation may be produced by disease of the joints or by traumatism, and in either the pain may vary from slight twinges to most intense suffering. If the irritation is continued for any length of time the muscles supplied by these nerves may become atrophied, a fact that frequently shows by measurement, but which is very noticeable to the feel.

In the pelvic joints as in the other joints it is to be remembered that the joint weakness which results from the common injuries or long continued strains predisposes to disease which probably would not develop otherwise. This is undoubtedly true of any of the infectious processes, either the tubercular or the non-tubercular, and it is certainly true that continued strain or injury leads to the development of the hypertrophic arthritis (osteo arthritis), which in many instances results in the complete ankylosis of the joint.

Of the special disease conditions most often met in these joints, the infectious processes are the most common, and of these the tuberculous is less frequent than the non-tuberculous. Of the non-tuberculous infections, any of a large number of organisms may apparently produce the local conditions, being part of a polyarticular process or confined entirely to this region. The course of the disease in the given case must naturally depend on the particular organism that is present or on the degree of virulence shown by this organism. The symptoms may be mild, with no ultimate impairment of the joint function, or they may be very severe, with actual bone destruction, with much suffering, and with much disability.

CONSIDERATION OF THE PELVIC JOINTS IN CONNECTION WITH THE SUPPORT OF THE ABDOMINAL AND PELVIC VISCERA.

The importance of the stability of the pelvic joints in connection with the proper support of the abdominal and pelvic viscera has been mentioned earlier in the paper. It is, however, my wish at this time to emphasize this feature more definitely, since an understanding of it suggests the explanation of many conditions about which there has, at least, been uncertainty, and at the same time suggest treatment for the relief of symptoms now not satisfactorily controlled.

The viscera are held in position naturally by ligaments or structures which, while perhaps not so designated, are nevertheless ligaments in point of practical function, by muscles, and by the direct support which one organ from its bulk or structure may give another. In the first place, of these the muscular support is undoubtedly the most important. The tone of the ligaments naturally depends largely on the tone of the muscles, since that which stimulates one must stimulate the other, and also because that which lessens the muscle tone leads to increased strain on the ligaments, this in turn, if continued, leading to weakness of the structures strained. In the second place, the muscles are of importance not only by furnishing firm abdominal walls, thus preventing the sag of the viscera and leading to the weakness and relaxation of the ligaments, but are of quite as much importance in making it possible to hold the body in such attitudes that there is the least possible tendency to visceral sag with the ligamentous strain. It is evident at once that when the body is erect with the muscles in good tone, in which the abdominal walls are firm and comparatively flat, that the viscera, the stomach, the liver, the intestines, the kidneys, in fact all the viscera, are causing the minimum amount of sag and producing the minimum amount of ligamentous strain. It is equally evident in the attitudes seen invariably in those who are poorly developed that there must be more drag on the ligaments, with consequently an increasing tendency for this drag to become more marked. The mere character of the attitudes, all of which are attitudes of muscle fatigue and in all of which there is the droop of the body forward, the organs sag more and drag forward, pulling directly away from their attachments. With the body erect and being held, as so many of these organs are, against the spine or back of the abdomen, this wall actually holds them in place to a certain degree, entirely apart from the ligamentous support, so that the amount of ligamentous strain is comparatively slight.

If this is true, and there can, it seems to me, be little question if the subject is carefully considered, especially if at the same time the results of the ordinary treatment of the loose or misplaced viscera are also considered, then the condition of the general muscle tone becomes of more importance than has been commonly held. It must be remembered that strain, relaxation, or disease of the pelvic joints must be followed by weakness and relaxation of the muscles attached to the bones making up the pelvis. It must also be remembered, as has been previously explained, that weakness of the muscles attached to these bones necessarily leads to weakness of the pelvic joints, so that strain and relaxation frequently take place.

If these two conditions are recognized, so that in whatever treatment may be decided on, whether surgical or medical, the stability of the joints is also recognized and appropriately treated, I fully believe that there will be a much smaller number of patients, than exist at present, who are unrelieved even after long and often heroic treatment for conditions in which the viscera are loose or misplaced. I do not naturally believe that the joint condition is responsible for all of the cases of visceral displacement and relaxation, with all their neurasthenic manifestations, but I do believe that either condition may lead to the other and that when once started there exists a vicious circle of cause and effect which makes it difficult to relieve unless both are recognized. Joint support and improvement in the muscle tone may not alone relieve the many symptoms present in such cases any more than does surgery by itself often relieve such cases, but if the problem is faced from both points of view I believe most fully that unless some actual disease is shown to be present (which, of course, is rarely the case), the relief of this large class of patients is simple and definite, and will not in the future represent the reproach to the profession that it does at the present time.

SYMPTOMS.

The symptoms on which a diagnosis of disease or weakness of the pelvic joints is to be based vary considerably, but certain ones are practically always present, and if properly interpreted should make its recognition easy. The most common symptom is the limitation of motion, and this in itself is usually very suggestive.

Pain.—Aside from the limitation of motion, pain, which may be localized at the seat of the disease or referred to the leg or foot, is the most important symptom. The referred pains may extend the length of the leg or may be referred to definite areas in the upper or lower leg or the foot. They are definitely increased by mo-

tions which result in strain of the affected joints, but are not increased by pressure along the course of the nerves, as would be true with a neuritis. The pain is almost always worse at night, because of the strain on the pelvic joints which results from recumbancy, but is relieved by changes of position which overcome this strain, and is prevented by postures in which this strain is not present. In the day time it is not apt to be present unless the joints are strained, as may result after long sitting, standing, stair climbing, stooping, etc. It is always worse in one leg, but may be present in both. The local pain when present may be referred definitely to the sacroiliac joints, but more often to the sacral region. This is made worse by anything that results in strain of these joints, and in women is worse at the menstrual period, because of the increased mobility of the joints at that time and consequently the greater possibility of joint strain. Recumbency, long sitting, or standing increases the pain because of the strain of these joints possible at such times.

With children the pains usually take the form of legache or backache, rarely being acute, and while they may be present during the day and interfere with the normal activities, they are almost always present at night, awakening the child, and are often supposed to be growing pains or confused with the night cries and pains met with in disease of the spine or hip.

Swelling.—At times, usually in connection with the infectious processes, the sacroiliac joints are swollen sufficiently so that the swelling is visible and can be palpated. The character of the swelling will depend on the nature of the lesion. If tuberculous, there is usually considerable infiltration of the tissues without definite fluctuation, unless the process is so far advanced as to result in abscess formation. With this there is also to be expected considerable atrophy of the buttock, and this, with the history and slow onset, is usually enough to make the nature of the process clear. With the non-tuberculous processes the infiltration is less, and there can sometimes be made out a distinct sense of fluctuation. The muscular atrophy is slight, and this, together with the more acute onset and the usual involvement of some of the other joints, should make differentiation possible.

Abnormal Mobility.—While in lesions of the pelvic joints there is almost invariably limitation of some of the motions, there also, in certain cases, is an increase of the normal motion. This increase will naturally be seen chiefly in the cases in which, as the result of long continued strain, the joints are much relaxed. To determine this various tests may be made. Forced hyperextension of the thighs, one at a time, thus moving the ilia on the sacrum, may be sufficient. At other times with the patient standing, if one hand is held over the sacrum and the pubic bones are held between the thumb and finger of the other hand, and the patient now raises first one knee and then the other, the motion is often quite distinct. Again if the crests of the ilia are grasped with the two hands, the thumbs resting on the sacrum, and the patient raises the legs as above, the mobility is also often apparent. Another method is to have the patient lie down and raise first one leg and then the other with the knee straight. With one or all of these the mobility is usually apparent, but it is to be borne in mind that while there is an abnormal amount of motion under certain conditions, there is also in these very cases under other tests, definite limitation of motion.

Attitudes on Standing or Walking.—Disease or weakness of the sacroiliac joints frequently results in peculiarities in the use of the body that are suggestive. When standing, the body is usually inclined away from the joint chiefly affected. In rising, the spine is usually held rigid, and the hands are frequently used for support. In stooping, the flexion of the trunk is avoided. In walking, the motions are made guardedly if the condition is at all acute, or if the joints are much relaxed the gait is rolling or even waddling as the result of this pelvic instability. If the condition be acute, a long step in walking is impossible, owing to the spasm of the hamstring muscles, produced where the knee is straightened with the thigh flexed. In lifting the weight with the knee bent, as in stair climbing or rising from the sitting posture, the discomfort is increased, and the hands are frequently used for support.

Limitation of Motion.—In any event, if the sacroiliac joints are strained or diseased, motion of the body which causes strain of these joints is limited involuntarily, as is true in the disease of other joints. With the sacroiliac joints, the limitation may show by motions of the body on the thighs or by the motions of the thighs on the body. In the first place, forward bending of the body with the knees straight will be limited if the lesion is one of any magnitude, since as soon as the hamstring muscles become tight, the motion which up to that point had been made largely in the hip and spine is then made by the sacroiliac joints and the spine. When this point is reached the spinal and trunk muscles contract reflexly to protect the irritated joint, and the motions are restricted. To determine whether this limitation of motion is due to disease of the spine or to the sacroiliac joints, the tension of the hamstring muscles should be released, and this is most easily accomplished by the patient being allowed to sit, and in this position the same motion tried. If the spine is involved the limitation will be present in this test as when standing. If the sacroiliac joints are at fault, however, the bending will be much more free, since with the hamstring muscles relaxed, the forward bending is performed almost entirely with the hips and the spine, the sacroiliac joints under such conditions being used only in the extremes of motion such as are rarely made. While the forward bending is limited when the patient is standing, the lateral bending is also limited. In this, as one side is usually more affected than the other, the bending to one side may be more free than to the other, and not only is this more free but it is usually made with different segments of the spine. While with the forward bending the change from standing to sitting makes a very noticeable difference in the motions, in the lateral bending this difference is not as marked, since in this the hamstring muscles play but little part. In backward bending the motions are usually guarded, while in the extreme cases the body may even be drawn forward so that it is not possible to assume the erect position, and under these conditions backward bending would naturally be entirely impossible.

Thus far in the consideration of the motions, the thighs are made the fixed point, and not only this, but the tests are made with the joints carrying the body weight. These same motions can be tested without the latter feature being present, by having the patient lie down and the thighs held fixed. In this way, if lying on the back, the forward bending can be tested by raising the body, and when on the face the amount of backward or lateral bending can also be determined.

After these tests have been made the leg motions should next be tried, the body, in this, becoming the fixed point. The knee motions should be free and with the knee bent, the hip motions should be free and without pain except when the disease or lesion of the joint is very acute, at which times the extremes of motion, especially outward rotation with abduction, may be associated with pain referred to the sacroiliac joints. In making these tests, while the hip motions are free as long as the knee is flexed, if the knee be straightened and then flexion of the thigh is attempted, the limitation will be definite. In this position the hamstring muscles are stretched, and since these muscles are attached to the ischia, then any motion made in which they are tense as in the straight leg raising, will result in the innominate bone moving with the leg and in this way the motion and possible sensitiveness to the sacroiliac joints will be developed. In any case in which there is definite disease or weakness of these joints, the straight leg raising will be limited, and not only is the motion limited, but attempt to carry it farther will develop pain which will be referred either directly to the sacral region or to the legs. In applying this test, whenever there is trouble in one joint, not only will the straight leg raising on that side be limited, but also there will be a similar limitation in the other leg, although naturally not as marked. This limitation on the opposite side is to be explained by the fact that in the motion made with the hamstring muscles tight the ilium on that side is moved, the sacrum naturally moving with it, and as the result of this movement of the sacrum the affected joint, although on the opposite side, is strained. Not only is this limitation of motion present on the side away from the lesion, but the pain which is developed by this same test is referred to the seat of the disease or to the leg on the side affected, so that whether one leg or the other is raised the pain is referred to the one on the side of the lesion. These tests, which should be at first made passively, will be even more striking if attempted actively by the patient.

TREATMENT.

It is not the intent in this paper to enter into a detailed discussion of the various features involved in the treatment of the pelvic joint lesions. The time is too short in the first place, and in the second place there is comparatively little new to be added to that which was described in the earlier paper already referred to. At this time it is the purpose to simply state the principles which should represent the basis of the treatment, leaving the application of these principles to the discretion of the physician who may be responsible for the given case. It must be remembered, and this should never be lost sight of, that the pelvic joints, being joints, differ in regard to their treatment only, as would be determined by their anatomic or mechanical peculiarities. If the joints are being strained, they should naturally be relieved from strain. If they are diseased, the treatment would be such as would be indicated for that particular disease in any of the other joints.

If the condition represents one of strain, whether acute or chronic, naturally the first consideration should be to protect the joints from strain; and, as the strain may be received under different conditions, in standing, in sitting or in lying down, all of these features must be taken into account. Long standing should be avoided, but in standing the body should be held erect so that the proper poise, with the weight through the shoulders, hips, knees and ankles, is obtained. In sitting the lounging attitudes should be avoided, and, if necessary, a support in the hollow of the back should be used to prevent the sag of the lower spine. In lying, especially in the dorsal position, a support under the lumbar spine should be used also to prevent the sag to the back or sides.

Frequently by relieving the attitudes of strain the symptoms are relieved and the condition is corrected, so that nothing further is needed. At other times, however, while this relieves, it does not correct the trouble, and mechanical assistance for the support of the joints becomes necessary. For this the adhesive plaster strapping applied across the lower back may be sufficient, or belts fitted to give support about the pelvis (avoiding pressure on the crests of the ilia) are often required, while at times more rigid or complicated forms of apparatus may be needed, but only as the simpler forms fail.

In all of these conditions in which the symptoms are due to joint strain which is consequent almost always on the weakness of the muscles, it is to be recognized that, while mechanical supports may be necessary for a time in order to relieve the acute strain, these are nevertheless only palliative measures and do not correct the primary weakness. To overcome this, special exercises (given so as not to cause strain of the weak joints), massage, stimulating bathing, etc., are of the utmost importance and should be continued until every evidence of the weakness has passed.

If the symptoms are due to disease, the nature of the disease should, of course, be determined first, and then such treatment applied as would be consistent with the special disease present. If tuberculosis, the joints should naturally be protected so as to avoid painful use, and for this the stiff jackets are most often satisfactory. If inflammatory processes, due to other organisms than the tubercular, the so-called infectious arthritis, the joints should also be protected so as to avoid painful use, and for this all varieties from simple firm bandages covering the lower body and thighs, to the rigid jackets, may be required.

If the hypertrophic arthritis (formerly called osteo-arthritis) is present, the joints should be protected, as is true with the same process in other joints.

At times the symptoms are due to the displacement of the bones, and when this is the case naturally, supports, no matter how perfectly they may be fitted, will fail to give relief. Under such conditions the position of the bones should be corrected, and, as the malposition does not often consist in more than the slight slipping of one ilium on the sacrum or sacrum on one or both ilia, this is not usually difficult and may be brought about in several ways. At times simply hyperextending the spine, as would be produced by having the patient lie with a firm pillow under the "hollow of the back," may, by raising the lumbar spine, draw the sacrum into place. At other times the same thing may be accomplished by having the patient lie face downward with the thighs and legs supported on one table, and the head and shoulders on another, the body hanging entirely unsupported between. In this position the weight of the body drags the spine forward, thus favoring the replacement of the sacrum. If this is successful, the plaster-of-Paris jacket, which may be considered advisable to hold the bones in place, may be applied before the patient is moved.

At times more definite pressure over the sacrum ap-

parently is needed, and for this the frame which is in common use for the application of plaster-of-Paris jackets in the hyperextended position in cases of Pott's disease works admirably. In using this the flexible rods, which conform to the shape of the back, should be bent with a sharp curve low down, so that the greatest pressure is on the upper part of the sacrum and the low lumbar spine. In this position the weight of the body tends to force the sacrum forward, with frequently sudden marked relief as the bones slip into place. While in this position, the plaster-of-Paris jacket should be applied, the steels being removed when the jacket is thoroughly hard.

If these procedures are not successful, an attempt should be made to manipulate the ilium on the sacrum and thus effect the replacement. For this the patient should lie on the side, and with one hand gripping the ischium, while the other holds the iliac crest, the bone is moved on the sacrum either forward at the top or the reverse, depending on the character of the luxation.

In case none of these methods are successful, an anesthetic should be used so that the muscular relaxation is complete, and an attempt then made to overcome the difficulty. For this either of the above procedures may be used, but that which is most reliable consists in flexing the thigh, with the knee straight, so that the hamstring muscles are tight, to at least a right angle with the straight line of the body. If the displacement of the sacrum is backward, this manipulation will result in slipping the ilium backward on the sacrum and consequently into place. If the position of the bones is reversed the patient should lie on the face or side, and the thigh is drawn backward, the innominate bone moving with the femur because of the attachment of the Y ligament, so that the ileum is moved forward on the sacrum.

After the bones are once in place, they should be held by means of some fixed support, and for this purpose the plaster-of-Paris jacket is probably the best. This should be fitted well down over the buttocks and the trochanters, so that the pelvic bones, as well as the spine, are held.

Naturally from what has been said earlier in the paper, if disturbances of the pelvic or abdominal organs, such as could cause reflex relaxation of the pelvic joints, are present, these should be corrected before that which could more properly be called the joint treatment is undertaken.

PROGNOSIS.

The length of time required for treatment in a given case depends on many things. In a wrench or strain without much displacement of the bones, strapping for three or four weeks followed by a belt for a few weeks longer may be all that is necessary. If the condition still represents an injury, only more severe, the treatment must be kept up for a longer period, the duration and the completeness of the fixation depending on the severity of the injury. It should always be remembered in such cases that, as the sacrum and ilia are held in place almost entirely by ligaments and muscles, without bone sockets or other supports, the treatment should be continued for a considerably longer time and more attention paid to improving the tone of these structures than is considered necessary in other articulations where the ligamentous support is less important.

In the cases in which the symptoms are due to hypertrophic arthritis, tuberculosis or other inflammatory processes, the condition in these articulations should be treated in the same manner as a like condition in any of the other joints. The protection should be more complete than is necessary in the cases of strain, but the form of support is to be determined by the given case.

In the relaxed cases associated with pregnancy the patient may be allowed up with some form of support in three weeks after delivery, and the support should be worn until two or three menstrual periods have passed without trouble. If nursing prevents the menstruation the support should be worn for at least three months.

In some of the relaxed cases associated with menstruation without pregnancy or which are part of a general relaxation, it may be necessary to wear some form of support for an indefinite period.

In the cases in which the weakness has been associated with menstruation, or in which the weakness has followed pregnancy and gone on untreated, in case pregnancy should again occur, if the bones are properly supported during that period, benefit will result. The acute congestion of the joints occurring at such a time will act, as acute congestion in other chronic joint conditions acts, to stimulate more complete and more rapid repair.

Clinical Notes

SPIROCHETES IN HODGKIN'S DISEASE.

PRELIMINARY COMMUNICATION.

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Having noticed the frequency with which spirochetal infections are attracted to the lymphatic tissue, for example *Spirochæta pallida* to lymph glands, *Spirochæta obermeieri* to the spleen, and knowing the frequency with which spirillar forms are present in the mouth and familiar with the frequent history of enlarged tonsils preceding Hodgkin's disease, I was tempted to apply the specific stains for spirochetes to the glands in Hodgkin's disease.

This seemed the more likely to give results by coupling the observation of the peculiar giant cell formation described by Reed and by Longcope in the glands of Hodgkin's disease with the observation of Benda that the giant cell formation in syphilitic children's livers was made up of pale spirochetes.

With these thoughts in mind, I sent to a number of laboratories a request for glands of Hodgkin's disease which had been hardened in formalin. Dr. W. G. MacCallam, of Johns Hopkins, Baltimore, was the only one from whom I could obtain such, but from him I obtained two typical Hodgkin's glands.

The first of these I stained by Levaditi's method, the technic of which I owe to the kindness of Dr. H. R. Gaylord, of Buffalo. The result from this was surprising. The sections of the gland presented innumerable spirochetes. I next stained the other gland which came imbedded in paraffin with Giemsa's stain. This was not so successful in acuteness of stain, but showed very many spirochetes in these sections also.

I was not satisfied with my own observation, and submitted the sections to Dr. Fr. Pröscher, a former assistant of Ehrlich, now pathologist at the Allegheny General Hospital here. Dr. Pröscher has been familiar with the spirochete for a number of years. He had no idea of my thought in the matter and at once pronounced it a syphilitic gland, remarking, however, that he had never seen so many spirochetes in luetic tissue.

I next stained sections in iron hematoxylin and eosin and was surprised to find the organism stained a deep black with this stain within the blood vessels. Dr. Pröscher also identified these, but always insisted that they were pale spirochetes.

Two facts, however, are positive:

First.—The glands which Dr. MacCallam sent me were diagnosed as Hodgkin's disease and conformed in every way to the histologic structure described so carefully by Reed and later by Longcope for this affection, the uninuclear and multinuclear giant cells and abundant eosinophile cells with the increased reticulum all being present in the sections.

Second.—There were in the sections of these glands tremendous numbers of spirochetes which stained readily with Levaditi's silver method, with Giemsa's method and with iron hematoxylin. The Levaditi sections gave a beautiful counterstain with toluidin blue.

The spirochetes were in the blood vessels among the cells and at times within the cells. In a later paper I will furnish drawings of these sections and a fuller description of the findings. The presence of the organisms within the blood vessels would indicate that they should be found in the blood stream of these cases during life. It is not possible that they were in any way accidental; their tremendous numbers quite preclude this.

Three possibilities are presented by these conditions: 1, either the spirochetes were the etiologic factor in the enlargement of these Hodgkin's glands; or, 2, the glands were infected secondarily with *Spirochæta pallida;* or, 3, Hodgkin's disease may be a mild form of lues, as tuberculous glands are a mild form of tuberculosis.

My excuse for publishing this incomplete report is that my present work excludes my seeing or having the opportunity of studying other cases of Hodgkin's disease. My time is taken up fully with organization directed against tuberculosis in this city, and I have little time at disposal for the pursuance of this work further at this time. It seems, however, so positive a result that if it be true that spirochetes are a factor in Hodgkin's disease other cases examined in this way should give a similar result, and in the hands of observers with material at their disposal the truth or falsity of the relation can be more easily determined.

I wish to thank Dr. W. A. Gekler, my assistant, for his work in preparing the sections and Dr. Pröscher for his help and advice.

VAGINAL HEMORRHAGE IN THE NEW-BORN.

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Occurrences of vaginal hemorrhage of the new-born are sufficiently rare to warrant my reporting the following case:

History.—Baby D. was born Sunday morning, June 23, 1907, after a normal confinement of three and one-half hours' duration. When three days old her nurse noticed a tinge of red on her diaper. The day following, on inspecting the vulva, I noticed blood at the vaginal orifice and wiped away several drops with a pledget of absorbent cotton. The flow remained constant for two days, then gradually diminished in amount and ceased spontaneously June 30. Between one and two drams would be a fair estimate of the total amount of blood lost.

The infant was normal in every respect, weighing at birth 7½ pounds. She is the fourth child in a family of robust children. She comes of a remarkably healthy ancestral line—neither syphilis, tuberculosis nor any blood dyscrasia appearing as a possible etiologic factor in this disease. There was no history of trauma. The stump did not bleed when the cord separated on the eighth day—the time that the vaginal hemorrhage ceased. The baby is now six weeks old and there has been no recurrence of the hemorrhage. Precocious menstruation is thereby excluded.

In the light of our present knowledge the etiology of spontaneous vaginal hemorrhage of the new-born must be sought, as Holt points out, in the change of the character of the blood itself and in the radical change in the circulation of the blood produced by ligation of the cord.

SIMPLE METHOD OF RETAINING THE ANESTHETIC MASK IN PLACE.

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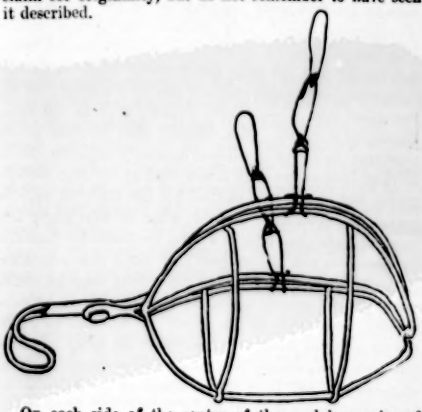
AULT, COLO.

On reading a recent article in THE JOURNAL I was reminded of a simple appliance which can be used to hold any kind of an anesthetic mask in place. I make no claim for originality, but do not remember to have seen it described.



On each side of the center of the oval base wire of say the ordinary Esmarch mask, loop two or three small rubber bands, end to end, and pass the last ones around the patient's ears. The tension should be slight—just enough to keep the mask in place. The curved handle is better turned toward the chin, then the mask can be raised like a trap door to regulate the air supply or to allow access to the mouth. With a struggling patient the advantages are obvious and it can be removed instantly, when desired, by a simple pull.

The Best Bovine Wet Nurse.—In an article with this title in the *Dietetic and Hygienic Gazette*, J. A. Gilbert, Portland, Ore., states that the milk of the Jersey cow is not suitable for infant feeding, as in that breed all else has been sacrificed to a milk rich in fat to be used in butter making. He asserts that Holstein milk most nearly meets the requirements. The fat globules are small and even-sized, ensuring a stable emulsion, slow churning, easy remiscibility, and ease of absorption. A milk like that of the Jersey, with large fat globules, churns easily and frequently globules of butter can be found in Jersey milk when it is delivered to the consumer. Milk poor in fat is better for the young growing animal than a milk rich in fat. A diet of milk with a great deal of fat destroys the appetite and disorganizes the digestion.

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SATURDAY, AUGUST 31, 1907.

THE DEVELOPMENT OF A METHOD OF STUDY OF EXPERIMENTAL THERAPEUTICS.

Although a vague appreciation of the fact that a therapeutic agent can act only on tissues with which it can combine has existed in medical thought since the earliest times, yet its proof and its application to therapeutic studies have been slow in coming. One of the reasons for this tardy progress lies in the impossibility of observing exactly how ordinary therapeutic agents distribute themselves in the healthy and diseased body, a difficulty that has been partly overcome in studies of therapeutic substances that are readily visible to the investigator even when highly diluted, such as the dyes. By introducing the "vital stains," that is, dyes which penetrate living cells without seriously injuring them, Ehrlich opened not only a new field of biologic investigation but also a new method for the study of experimental therapeutics. In 1880, when he first urged the value of methylene blue as a stain for bacteria, Landau suggested to him the propriety of using this substance as an internal antiseptic, but for a long time he could not pursuade himself to follow up this idea. The subsequent observation of the power of this dye to enter the elements of living nervous tissue led to its application with some success as a means of reducing the pain of neuralgia, and later to the discovery of its effect in destroying malarial parasites.

For many years Ehrlich did not follow up these experiments on the therapeutic application of dyes, feeling that without animal experiments nothing could be profitably done, but the study of trypanosome infections, which are readily transmitted to small laboratory animals, gave the looked-for opportunity which was promptly taken advantage of. The tremendous importance of trypanosome infections, both for human life and for economics in tropical and semi-tropical countries, added a special incentive to such investigations, which have yielded at least two valuable trypanocides and which open the way to further studies of the possibilities of internal antisepsis. As every one knows, what is desired above all things in medicine is a substance which will unite with bacteria and destroy them without at the same time uniting with and destroying the tissue cells, but as yet such a substance has not been produced in the laboratory. Appreciating the fact that drugs must combine with the cells they are to affect, we must seek some drug that has a greater affinity for the bacteria (bacteriotropic) than for the tissues (organotropic). The recent review by Ehrlich[1] of his experimental studies along this line is a classical example of the typical systematic, painstaking and thoroughly scientific German way of taking up a problem. The method followed consisted in trying one by one great numbers of different organic substances on animals infected with trypanosomes, until at last one was found that showed some slight influence on the course of the infection by delaying the fatal termination some few days. Having found such a substance the next step was to make in the chemical laboratory all sorts of modifications, trying each one on animals, until it was discovered what groups added to the effect of the drug; then by adding such groups in various positions in the molecule to secure the maximum of efficiency. By such exact but laborious methods as this a substance was at last obtained that had positive curative effects on trypanosome infections in mice, and called "trypan red" (Trypanrot). Indeed, so efficient is this dye that it is often possible by a single dose to exterminate entirely the trypanosomes that have infected a mouse, without dangerously intoxicating the animal. As might be expected of such a substance, its efficiency varies not only for different varieties of trypanosomes but also for different species of animals, hence the discovery of trypan red is only the beginning of these researches. Already derivatives of trypan red have been made which have more effect on certain of the pathogenic trypanosomes than has trypan red itself. Another investigator, Wendelstadt, has observed that a certain other class of dyes, malachite green and brilliant green, are efficient against certain varieties of trypanosomes, and Ehrlich has developed an effective trypanocide in parafuchsin which may be administered by mouth. Atoxyl, an organic arsenic compound, which has been found of great practical value in the trypanosome diseases of Africa by the workers of the Liverpool School of Tropical Medicine, and the value of which has been corroborated by Koch, is of different chemical nature from the dye stuffs mentioned above.

An interesting and important observation made by Ehrlich concerns the development of immunity by the trypanosomes against the various drugs mentioned above. It was found that if not all the trypanosomes were killed in an animal by a single dose of fuchsin, the survivors begin to multiply after a time, and although decreased in number by subsequent administration of the drug, yet after a time the parasites are not at all affected by fuchsin and increase until the animal is killed, even when it may be thoroughly saturated with fuchsin. If parasites from such an animal are transplanted to another animal they are found to retain this resistance to fuchsin, although they are not resistant to atoxyl or to trypan red. Similar strains of parasites immune to

1. Berl. klin. Wochschr., 1907, Nos. 9-12.

trypan red or to atoxyl can be obtained in the same manner. To the American reader this observation recalls Welch's pregnant suggestion that bacteria become immune to their hosts or to special tissues or fluids of their host just as readily as the host or his tissues become immune to the bacteria, for here Ehrlich finds a specific resistance on the part of a pathogenic protozoan to a toxic drug to which it has been repeatedly exposed. The existence of such a specific immunity on the part of the trypanosomes may be taken as evidence that the trypanocidal substances must each combine with some specific chemical group in the protoplasm of the parasite. Such immunized trypanosomes retain this acquired property through many generations after being transplanted to normal animals, a fact of great practical importance, for, as Ehrlich suggests, trypanosomes derived from persons under treatment with atoxyl may show themselves resistant to this drug when growing in a new host, and thus races of trypanosomes immune to atoxyl and the other remedies may be developed. Fortunately this immunity is strictly specific, so that a strain of trypanosomes that resist atoxyl is readily killed by trypan red, and conversely.

As there seem to be natural differences in the susceptibility of trypanosomes to the different drugs, we have an explanation of why Laveran and others have had the greatest therapeutic success with combined treatment by both atoxyl and trypan red. To avoid the development of strains of trypanosomes that are not susceptible to the drugs commonly used, Ehrlich urges that the medication in each case should be pushed hard at the beginning to destroy completely all the trypanosomes at once, if possible, without their having an opportunity to acquire resistance to the drug.

THE VIBRATING SENSATION IN DIAGNOSIS.

As the science of medicine grows older and the number of workers in the field of medical inquiry increases, new methods of diagnosis are constantly being added or old methods are modified. In some instances the tests of time and of independent investigation show that a new diagnostic method is not so pathognomonic as its originator thought, but under these circumstances it often happens that the method is still found to have value as a corroborator of other methods and serves as a link in a diagnostic chain of evidence. Among the new tests which have been used in Europe for some time, but have not been especially noted in this country, is the so-called vibrating sensation, sometimes spoken of as "bone sensibility" or as "pallesthesia."

If the foot of a tuning fork of a certain size is placed over subcutaneous bony prominences or surfaces a peculiar vibrating sensation is felt by normal individuals, and it is to this that the name "vibrating sensation" has been given. It seems that in order to produce the sensation the tuning fork must have a certain size and amplitude of vibration. Certain European authorities have had special tuning forks constructed, but this is not necessary, according to Williamson,[1] who states that a fork nine inches long with prongs five and a half inches long will suffice. The vibrating sensation is best tested at certain points, and if it is used as a routine test the same points should always be selected. The places best suited for the test are: The styloid process of the ulna, the external and internal malleoli, the inner surface of the shaft of the tibia, the anterior superior spines of the ilia, the sternum, the palms of the hands over the heads of the metacarpal bones, the soles of the feet over the heels and the heads of the metatarsal bones, and the nails of the fingers and thumb and the big toe.

The results from investigations of the test seem to show that it is of particular value in the early stages of certain diseases which are accompanied by loss of cutaneous sensibility, its greatest advantage lying in the fact that the vibrating sensation is often lost before changes in the ordinary sensibility can be made out. For this reason the test should be employed in patients suspected of having early tabes or peripheral neuritis. Investigation has also shown that in some instances in which nervous symptoms are not usually prominent, diabetes for example, changes in the vibrating sensation are rather common. It has long been known that in a small percentage of patients with diabetes mellitus changes occur in the cord similar to those found in pernicious anemia, but Williamson's researches seem to indicate that signs of less marked spinal changes are common in diabetes. He found frequently in this disease loss of vibrating sensation in the legs, often accompanied by pain and tenderness and loss of the Achilles jerk. In beginning paraplegia from spinal caries, and occasionally in patients with spinal syphilis, the loss of the vibrating sensation may be the first objective sign to appear. In diseases of the spinal cord strictly limited to the motor regions the vibrating sensation is not lost, even at an advanced stage of the disease. In the differentiation of organic and hysterical hemianesthesia the test may be of great value, for in the case of organic hemianesthesia the tuning fork placed on the sternum on the anesthetic side still causes the vibrating sensation, while in hysterical hemianesthesia the vibrating sensation is not felt on the anesthetic side, but is transmitted to the sound one. It would seem that the test for the vibrating sensation might be a valuable corroborative procedure in many nervous diseases, and may, in some diseases, allow of diagnosis at any earlier date than is at present possible.

MORPHIN AND THE ALIMENTARY CANAL.

The influence of morphin on the motor function of the gastrointestinal tract has long been a disputed point. In the human subject, the effect of morphin is usually seen in constipation, although in the non-habituated, as well as in the dog, the cat and the rabbit, diarrhea may

1. Brit. Med. Jour., July 20, 1907.

be provoked. According to Nothnagel, this result is brought about by the action of the drug on a spinal center, small doses stimulating the inhibitory mechanism and large doses paralyzing it. Other writers contend that the morphin acts directly on the intestinal wall, while still others believe that the action is partly central and partly peripheral. Several observers have investigated the influence of morphin on the action of the stomach. Batelli reports that the gastric movements are at first stimulated and later inhibited. Hirsch, who studied the gastric movements of a dog through a duodenal fistula, states that the evacuation of the stomach is delayed by a spasmodic contraction of the pylorus. Riegel has shown that morphin produces hypersecretion and hyperchlorhydria.

The most recent work on this subject may be found in the investigations of Magnus,[1] who, while he has not succeeded in simplifying the problem, has demonstrated certain facts which should help to harmonize much of the apparently contradictory evidence now before us. The first step in the work of Magnus was to test the validity of Nothnagel's theory. To accomplish this, he operated on cats, carefully dividing the nerve plexuses about the celiac axis and superior mesenteric vessels from the solar ganglia and the hypogastric, the inferior mesenteric and the small ascending colic branches from the mesenteric ganglia, thus practically cutting off the sympathetic nerve supply of the stomach and intestine. Before proceeding with the experiment he allowed a period of at least seven days to elapse, in which time he was able to demonstrate a degeneration of the peripheral portion of the cut nerves. In cats thus treated he was able to control an artificially induced diarrhea with as little morphin as had been required for the same cats before the operation, thus proving that the sympathetic system is not a necessary factor in this action of morphin.

In his further studies on the nature of the changes brought about by morphin, Magnus made use of Cannon's method of studying the movements of the gastrointestinal tract. Cats were fed with twenty-five centimeters of potato gruel, containing five grams of bismuth, and were then observed by means of a fluoroscope. In the normal cat, the entire stomach could be outlined by the shadow of the bismuth, and in the course of about fifteen minutes portions of the contents were seen to be rhythmically forced into the duodenum. In cats which had previously received an injection of morphin the picture was very different. In most cases, a certain amount of the food remained in the lower part of the esophagus for some time, but the most constant occurrence was a stasis of the food in the fundus of the stomach. When the morphin was administered after the stomach was full, the organ was seen to be divided into two parts by a spasmodic contraction of that circular bundle of muscle fibers known as the sphincter antri pylorici. That portion of the food which was shut off in the fundus by the sphincter remained there for a number of hours, while that which had already passed the sphincter went on undisturbed into the duodenum. Further experiments with a dog, in which a duodenal fistula had been established, showed that the time intervening between the entrance of food into the stomach and its passage into the duodenum was greatly lengthened by the influence of morphin, and that it required much more time for the stomach to empty itself even after peristalsis had been re-established.

His observations on the small intestine, both by means of the fluoroscope and by direct observation of the isolated gut, showed a stimulating action of morphin in moderate amounts, while very large doses slowed or stopped the peristaltic movements. This he attributed to the action of the drug on the plexus of Auerbach. While the passage of the chyme through the small intestine was accomplished with more rapidity than under normal circumstances, its ultimate arrival at the colon was much delayed by its retention in the stomach. Magnus could demonstrate little or no influence of morphin on the movements of the large intestine.

These experiments suggest that the constipation caused by morphin is the result of the retention of food in the stomach, and this may be due, at least partly, to the hypersecretion and increased acidity of the stomach contents which, it is well known, exerts an inhibiting influence on the gastric and intestinal movements. An interesting observation of Magnus concerns the dilatation of the stomach which occurs under the influence of morphin, and which he attributes to the accumulation of air which seems to be retained in consequence of a spasm of the cardia.

To what extent these observations of Magnus on experimental animals may be applied to the human subject remains to be demonstrated. Clinical evidence has shown that under many circumstances the peristaltic movement of the small intestine in man may be completely controlled by the administration of morphin. The possibility suggests itself that this may be accomplished when small doses are used rather by a suppression of the exciting cause of hyperperistalsis, such as some sensory irritation, with perhaps a blockade of the foodstuff in the stomach, than by the direct influence of the drug on the motor mechanism of the intestine.

These investigations suggest the interesting practical questions: To how great an extent does the use of morphin previous to operation tend to favor the occurrence of acute dilatation of the stomach, and what is the action of anesthetics, like chloroform, on the movements of the gastrointestinal canal?

1. Münch. med. Wochschr., No. xxix, 1907.

A JOURNAL OF HEALTH (?).

We recently received a copy of a journal of health which we have difficulty in classifying. At first sight it impressed us as being a perfectly ethical though

rather popular exchange. There was an article on milk supply by a physician who also had a high scholastic degree, and, although this article was a eulogy of a certain dairy, there was much in it of interest. Other articles dealt with what the people ought to know about proprietary remedies, medical frauds preying on women, osteopathy, etc., and expressed exactly the same general principles that we ourselves would enunciate, but with the significant exception that, in each instance, some particular remedy or institution was selected for the highest praise. The journal contained a liberal padding of humerous and "literary" material and some advertisements. Curiously enough, none of the advertisements were alluded to in the reading notices, and the announcement was made that no proposals would be received for insertion in the reading pages. The only way in which we can explain such a journal is that it is conducted by a syndicate of firms that want a certain kind of advertising; at the same time it is difficult to understand how such a journal could obtain *bona fide* advertisements from outside concerns, and why such a journal would be mailed to a physician of nominally good standing. It also seems a peculiar course to proclaim general ethical and hygienic principles and to expect that a fairly intelligent public will fail to see that they apply just as well to the nostrums and institutions singled out for praise as to others. It would be interesting to know if such a journal can secure a genuine subscription list, and if this kind of advertising, which shows up plainly the weak points of quackery in general, can be made to pay for certain quacks who say that they are different from others.

ALASKA AS A HEALTH RESORT.

The experience of the Army, which keeps about eight hundred soldiers constantly stationed at its posts in Alaska, would seem to indicate that that country is a remarkably healthy location for troops. There are six posts scattered over the vast territory, four of them but little south of the Arctic Circle. Notwithstanding that a great deal of labor incident to construction and maintenance of telegraph lines has devolved on the troops, the sick rate has been uniformly low, not at any time more than two-thirds of the rate in the United States. Since the statistics for Alaska have been compiled separately, that is since 1904, there has been but one case of typhoid fever and but four cases of malarial fever, all the latter probably contracted before going to Alaska, though mosquitoes of the sub-family *Anophelena* have been found at one post. Pneumonia is conspicuous by its absence from the returns. On the other hand, venereal diseases, alcoholism and tuberculosis have given higher rates than in the United States. The long, dark winters, with the consequent confinement to quarters, and the imperfect ventilation of the quarters resulting from the efforts to exclude the cold, have no doubt been factors in the development of tuberculosis. These same influences, together with the monotonous life in winter, have unquestionably encouraged the drink habit and its attendant liability to venereal infection. The fact remains, however, that Alaska is comparatively free from infectious diseases, and in the health-preserving qualities of its climate far surpasses that fairy land of the tropics, Hawaii.

HISTORIC SALT-FREE DIET IN ASCITES.

The value of a salt-free, or at least a salt-poor, diet in the treatment of edematous conditions is generally conceded to be a comparatively modern theory. That the fact was known, clinically at least, ten centuries before the christian era and probably much earlier is evidenced by the Charaka-Samhita. The Charaka-Samhita and the Susruta-Samhita are ancient Hindu medical works compiled from a still more venerable work, the Ayur-veda, which the Hindus say was written by the gods. The date of the compilation of the Charaka is probably 1000 B. C. and it corresponds to the Hippocratic treatises; in fact, there is little doubt that Hippocrates made free use of the work. The Charaka is written in Sanscrit of the most ancient construction. This ancient work, after describing the various kinds of "dropsy" and the appropriate treatment for each, recommends for "abdominal dropsy" (ascites) tapping. The postoperative treatment reads as follows:[1] "When the water has been let out the patient should first observe fasts and then take 'peya' (thin gruel of rice or other corn[2]) without any kind of oily substance and *salt*. After this the patient should for six months live on milk only. For the next three months he should live on 'peya' mixed with milk. For the next three months he should take the rice . . . with milk but *devoid of salt*." The following prognosis is given by Charaka if the instructions are followed: "Conducting himself thus for one year, one may conquer abdominal dropsy characterized by accumulation of water even when it has manifested itself in a pronounced way." This is a reminder that "there is no new thing under the sun." With peculiarly distorted views of human physiology and still more weird conceptions of pathogenesis of disease, these ancient writers, from careful clinical observation, had achieved no inconsiderable skill in the treatment of disease.

METEOROLOGIC FACTORS AND ACUTE RHEUMATISM.

The relation which acute rheumatism bears to meteorologic conditions has long been a subject of speculation and seems likely to remain so for some time. It would naturally be assumed that the disease would be most prevalent in moist weather, but this is so far from being the case that Newsholme and other authorities have brought forward evidence which strongly supports the view that exactly the opposite is true, viz.: that rheumatism is most apt to occur in extremely dry weather. Some recent studies published by Greenwood and Thompson[3] seem to support the view that acute articular rheumatism occurs most frequently, in England at any rate, during the driest month, August. The article points out that most of the conclusions as to the meteoro-

1. From the English translation of Charaka-Samhita by Paresh-nath Sarma, Calcutta.
2. Corn is here used to mean any small grain.
3. Journal of Hygiene, vii, No. 2, 1907.

logic relations of rheumatism have been drawn from hospital statistics, and it further shows that a "general hospital population" is constituted differently from a normal population. This really opens up the whole question of disease statistics and suggests that many of them, being based on studies of hospital patients rather than on the normal population, probably contain serious errors. It suggests that, in working out problems of this kind, the collective investigation method, carried on by committees of medical societies or of groups of practitioners, will probably give more reliable statistics than hospital records.

YELLOW FEVER IN CUBA.

The reappearance of yellow fever in Cuba is a matter of a good deal of sanitary significance, especially in the light of the testimony of Governor Magoon as to the inefficiency of the local municipal authorities in matters of sanitation. In Havana reasonable attention to health conditions could be looked for, but in the smaller cities and rural districts, as the recent outbreak at Cienfuegos demonstrates, this could not be guaranteed. There seemed little prospect, judging from past records and the governor's testimony, that the Cuban local authorities would if left to themselves carry out the conditions of the treaty securing Cuban independence, so far as sanitation is concerned. The signing of the decree[1] by Governor Magoon by which the sanitary service is nationalized is, therefore, a matter of great import. The municipal sanitary service is, by this important measure, taken out of the hands of the local authorities all over the island and placed under the control of the Havana department of sanitation. The local authorities have been tried and found wanting; a Cuba left to itself would doubtless be a yellow fever peril for many years to come. With the closer commercial relations of the island with this country, much closer of late years than before its separation from Spain, this has become a very important matter. The United States has assumed a certain degree of responsibility for Cuban good government and welfare which some of us would be glad to see relinquished. If such a policy were adopted, however, there is every reason to fear that conditions would soon become unendurable.

VACCINE IMMUNITY.

The advisory board of the Department of Health of Pennsylvania has ruled that three faithfully performed vaccinations at intervals of two successive weeks without taking are sufficient evidence that the individual is for the time being (estimated as one year) immune from smallpox. This is probably correct enough for most sanitary purposes, and the chances of a smallpox epidemic with such a rule in force may be practically negligible. Many physicians, however, have seen cases in which typical vaccinia has been produced by a fourth or fifth attempt at vaccination, hence it is not an altogether safe rule to follow with patients who have never been successfully vaccinated, that is, so far as absolute immunity is concerned.

1. Referred to in General News in this issue.

NEED OF A NATIONAL VAGRANCY LAW.

The need of a national law dealing with tramps or vagrants and of better provisions for dealing with this class in cities is urged by Graham Taylor,[1] in commenting on the paper of Orlando F. Lewis on "Vagrancy in the United States," read before the National Conference of Charities and Correction. The vagrant is a well-known means of introducing epidemics, and when he crosses state lines the only effective means of dealing with him is by the national law and a national board of health. The problem of the tramp in the cities has close relations with the public health. Taylor says: "Far better provision for lodging homeless men must be made by cities in municipal lodging houses of their own, such as Chicago effectively conducts, and by far stricter public regulation and supervision of lodging houses must be maintained for profit or by charity. The antituberculosis crusade shows that this supervision and regulation should be shared by the health authorities with the police. Within a period of five years 679 consumptives were taken from only a portion of Chicago's lodging house district to Cook County Hospital, most of them in the most dangerously infectious stages of the disease. An investigator of Chicago's 165 cheap lodging houses and their 19,000 beds declares that 'the unfortunate man forced to sojourn in them for a while may enter sound and strong and come out condemned to death'."

1. Charities and the Commons, Aug. 10, 1907.

Medical News

ALABAMA.

Physicians' Building.—An association of 15 physicians of Mobile, headed by Dr. C. S. Spotswood, proposes to erect a four-story building, to be occupied exclusively by physicians, and to cost $50,000.

Personal.—Dr. James B. Luckie, Birmingham, is reported to be seriously ill with spinal disease.——Dr. Marion J. B. Vancroft has been elected president, and Dr. John O. Rush, secretary, of the Mobile Chapter of Auburn Alumni.——Dr. Byron T. Dozier, Birmingham, has been appointed surgeon general of the United Sons of Confederate Veterans.

COLORADO.

Scarlet Fever.—By order of the Board of Health, the schools and theaters of Leadville have been closed on account of the prevalence of scarlet fever.

Personal.—Dr. A. W. Scarlet, Pueblo, is convalescent after a severe attack of typhoid fever.——Dr. William Page Harlow has been appointed dean of the medical school of the University of Colorado, Boulder, vice Dr. Lucian M. Giffin, resigned; Dr. Rosa O. Whitman, Chicago, professor of pathology and secretary; Dr. Edward F. Dean, Denver, professor of anatomy, and Dr. John Andrew, Jr., Longmont, demonstrator of anatomy.

GEORGIA.

Critically Ill.—Dr. George B. Carter, a veteran practitioner of Wilkinson County, was recently seized with cerebral hemorrhage and is reported to be critically ill.

Open to Female Students.—The Atlanta School of Medicine has announced that the institution is to be made coeducational, and at the opening session, September 25, a dozen or more women will begin their studies at that institution.

Against Tuberculosis.—The Georgia Antituberculosis League held a meeting August 3, when the following officers were elected: Dr. Joseph M. Thomas, Griffin, president; Dr. J. Cheston King, Atlanta, and Harry R. Slack, La Grange, vice-presidents; and Dr. Louis C. Roughlin, Atlanta, secretary and treasurer.

Railway Hospital to be Opened.—Drs. William C. Jernigan, Thomas H. Hancock and James D. Manget, Atlanta, surgeons for the Southern Railway, the Georgia Railway and Electric

Company and other corporations, are arranging to open a sanitarium and emergency hospital in Atlanta, September 1. A double tenement at 31 and 33 Cone Street has been secured and is being equipped. There will be separate wards for white and colored patients, and ambulance service is to be provided.

ILLINOIS.

Communicable Diseases.—A number of cases of typhoid fever are reported in Decatur.——Dr. Charles E. Crawford, Rockford, inspector of the State Board of Health, has returned from Coal Valley, where he found 10 cases of smallpox and placed the infected houses under quarantine. The disease is said to have existed in Coal Valley for two months, but had been diagnosed as chicken-pox.

Personal.—Dr. Joseph C. Dodds, Champaign, has been appointed district surgeon for the Illinois Central Railroad between Gilman and Effingham, vice Dr. Henry E. Cushing, deceased.——Dr. F. B. Clark, Elgin, has been appointed assistant physician at the Illinois Western Hospital for the Insane, Watertown.——Dr. Robert Hoag has been transferred from the Home for Feeble-minded Children, Lincoln, to the Illinois Northern Hospital for the Insane, Elgin.——Dr. James M. Tinsley, Philo, sailed from Liverpool August 15, on his return from Europe.

Chicago.

Hospital Addition.—The work on the George W. Smith memorial addition to St. Luke's Hospital was commenced August 19. By the will of the late George W. Smith $500,000 was bequeathed for this purpose. The new structure is to be devoted to paying patients, and the income from this to the charity wards of the hospital. The building will be six stories in height and will contain accommodation for 112 patients.

Isiolation Hospital Closed.—The Chicago Isolation Hospital was closed on August 20 because of the lack of patients. Since December 20 74 smallpox patients have been under treatment at the hospital. The largest number registered was on March 20, when 20 patients were in the hospital. Not one of the attending physicians, nor one of the thousands of visitors nor of the 2,000 medical students who visited the hospital, contracted the disease.

Deaths of the Week.—During the week ended August 24, 684 deaths were reported, 14 more than for the preceding week and 104 more than for the corresponding week of 1906, the respective annual death rates being 16.92, 16.58 and 14.99 per 1,000. Acute intestinal diseases led death causes with 212, followed by consumption and violence (including suicide), each with 51; heart disease, with 45; pneumonia, with 39, and nephritis, with 37. Typhoid fever caused 11 deaths; scarlet fever, 8; diphtheria, 5, and whooping-cough, 4.

Communicable Diseases.—During the week ended August 24, 55 cases of diphtheria, 68 of scarlet fever, 16 of whooping-cough, 7 of measles, 20 of typhoid fever and 41 of consumption were reported. This is an increase of 12 cases of diphtheria and 25 cases of scarlet fever over the preceding week. The other diseases decreased slightly in number during the week. The outbreak of scarlet fever in South Chicago has been kept under control by the active cooperation of the department of health and the police department, with the aid of the doctors and priests in that section of the city.

INDIANA.

Personal.—Dr. Ruliff L. Truitt, Hartford City, has resigned as a member of the city council.——Dr. Richard B. Wetherell, Lafayette, sails from New York in October for a trip around the world.

Warning to Physicians.—On account of the increase in typhoid in Fort Wayne, the city board of health has sent a circular letter to physicians calling attention to the necessity for the immediate report of contagious diseases in accordance with the state statutes.

Epileptic Village.—Dr. W. C. Van Nuys, superintendent of the State Epileptic Village near Newcastle, announces that the first two cottages are completed and furnished, that attendants have been engaged, and that the institution will be ready to receive patients as soon as the governor issues his proclamation declaring the institutions open.

Evansville to Fight Tuberculosis.—An Evansville Anti-Tuberculosis Association has been organized. A tract of land is to be secured near the city where the tents will be erected for the care of patients. Dr. James Y. Welborn has been elected president of the association, which proposes to raise a fund of $15,000 with which to conduct the work. The physicians of the city have been asked by the association to report all cases of tuberculosis.

INDIAN TERRITORY.

Buy Hospital.—The Muskogee Hospital Association has purchased the Martha Robb Hospital in that city.

Personal.—Dr. Walter Penquite, Chickasha, fell down an embankment recently and fractured a rib.——Dr. Robert H. Henry has been elected a member of the Ardmore Board of Health.

IOWA.

Free Dispensary to Open.—The Sioux City Medical College in cooperation with Helping Hand Mission, will open a free dispensary September 1. Regular clinics will be open to all students of the college.

Personal.—Dr. and Mrs. Theodore B. Askew, Waterloo, sailed for Europe August 24.——Dr. Lee M. Coffee, Keokuk, has been elected professor of clinical diseases of the stomach and intestines, in Keokuk Medical College, and Dr. John R. Walker, Fort Madison, professor of etiology, hygiene and state medicine.——Dr. J. L. Whinery, Marshalltown, is critically ill.

KENTUCKY.

Veterinarians Attend Meeting of Dairymen.—Dr. F. T. Eisenman, state veterinarian, and R. M. Allen, state inspector of food and dairy products, were invited to attend the mass meeting of the dairymen of Hardin County, held at Elizabethtown, August 24. The purpose of the meeting was to enable the dairymen of Hardin County to compare notes relative to their business and to give and receive suggestions looking toward better sanitation in the way of handling milk. The meeting is the result of the refusal of the health department to allow the milk from a certain dairy to be received in the city until a tuberculin test has been made of the twenty cows of the herd. A number of cases of acute milk infection has been traced to the milk delivered by this dairy. One cow was found infected and the rest were healthy.

State Board Meeting.—The twenty-ninth annual meeting of the State Board of Health was held at Bowling Green August 23. The following officers were elected: Drs. Joseph M. Mathews, Louisville, re-elected president for two years, and J. N. McCormack, Bowling Green, re-elected secretary for the seventh consecutive time, for a term of four years. Prof. Felix C. Herrick of the Male High School was elected student examiner for Kentucky to pass on the entrance qualifications of students of medicine. The following order regarding tuberculin tests in dairy herds was passed:

> In the examination for dairy herds for tuberculosis the state veterinarian and his assistants are hereby instructed to confine the tubercular test to cows actually and individually diseased instead of extending it to the entire herd, and diseased individual cows shall be condemned instead of putting the entire herd or farm in quarantine. The board offers a reward of $25 for the conviction of any person practicing medicine or any branch of the healing art in the state in violation of law. The examining committee reported that 29 applicants had passed the examination for license to practice in the state and that 19 had failed to make necessary grade. The secretary in his report calls attention to the meager appropriation given to the State Board of Health in comparison to other appropriations for the health departments in other states. The State Board of Health receives but $5,000, while the appropriation for the Massachusetts State Board of Health is $110,000, and for that of Louisiana is $100,000. It was also shown that there had been 13,305 cases of typhoid fever reported by Kentucky physicians with 1,579 deaths. There were 3,219 deaths from tuberculosis, 1,925 from diarrheal diseases of childhood, 1,068 from diphtheria, 933 from dysentery and 119 from scarlet fever.

MARYLAND.

Baltimore.

Bequest to Physician.—By the will of the late Albert D. Shrewsbury half of his property is bequeathed to Dr. Annie W. Marchant for services rendered him during his last illness.

Personal.—Dr. Robert P. Bay, assistant surgeon at the University of Maryland Hospital, has resigned, to become medical superintendent at Bayview Asylum. Dr. R. W. Crawford has succeeded Dr. Bay.

Frank Memorial Hospital.—The drawings for the Frank Memorial Hospital, adjoining the Hebrew Hospital, have been completed. It has been decided to erect only one structure instead of two, as originally contemplated.

Tuberculosis Campaign.—By a combination of the most advanced method of advertising, circular letters, etc., the Maryland Association for the Relief and Prevention of Tuberculosis has raised in 23 days the required $10,000 required for its maintenance for a year.

MASSACHUSETTS.

Personal.—The Lawrence board of health has appointed Drs. J. Forrest Burnham, John C. Bowker, John J. O'Sullivan, Joseph F. Howard and Alphonse H. Petit school physicians.

Illegal Practitioner Sentenced.—William H. Bailey, Somerville, who is said to have been arrested many times for malpractice, but never yet found guilty, and who was charged with performing an illegal operation on a 19-year-old girl, was found guilty in the Suffolk Superior Criminal Court, August 14, and is said to have been sentenced to imprisonment for from three to five years in the state penitentiary.

Healer in Trouble.—John R. Laxton, a "botanic" healer of Lynn, was summoned before the police court August 23, charged with practicing medicine without a license. This is one of the first shots fired in the battle which Lynn physicians have started against a great number of persons in that city alleged to be practicing medicine without the license required by the state. In this case the defendant pleaded not guilty and the case was continued until September 6.

Too Expensive an Outfit.—The owners of small shops and factories are objecting to the long list of surgical instruments, appliances and dressings required by the order recently issued by the Boston board of health. The cost of the outfit is said to be about $25, and no provision is made for modification in regard to the size of the factory or the number of employés. The law in the case is as follows:

> Every person, firm or corporation operating a factory or shop in which machinery is used for any manufacturing purpose, or for any purpose except for elevators, or for heating or hoisting apparatus, shall at all times keep and maintain, free of expense to the employés, such a medical and surgical chest as shall be required by the local board of health of any city or town where such machinery is used, containing plasters, bandages, absorbent cotton, gauze, and all other necessary medicines, instruments and other appliances for the treatment of persons injured or taken ill on the premises.
>
> Any person, firm or corporation violating this act shall be subject to a fine of not less than $5 nor more than $500 for every week during which such violation continues.

MINNESOTA.

Epidemic Diseases.—The prevalence of diphtheria at Eveleth is causing alarm.——Appleton is said to be threatened with an epidemic of scarlet fever.

Pasteur Institute.—The Pasteur Institute of Minnesota at Minneapolis is fully equipped and ready to receive patients. It is located in the new building at the State University, known as the Institute of Public Health and Pathology, and is under the control of Dr. Oriana McDaniel.

MONTANA.

Society Meeting.—At the annual meeting of the Beaverhead County Medical Association, Dr. Maurice A. Walker, Dillon, was elected president; Dr. Robert H. Ryburn, Bannack, vice-president; Dr. Frederick M. Pointdexter, Dillon, secretary, and Dr. Harry A. Bond, Dillon, treasurer.

Personal.—Drs. John J. Buckley and Thomas A. Fitzgerald, Missoula, were injured by the overturning of an automobile recently.——Dr. H. W. Miller, of the Northern Pacific Hospital, Missoula, has gone to Jamestown, N. D., to become first assistant physician in the State Hospital for the Insane.——Dr. Albert H. Gieschen, Butte, has been appointed house physician of the Wells Hospital in that city.

NEBRASKA.

Personal.—Dr. Clifford W. Walden, Beatrice, has been appointed surgeon to the Second Infantry, Nebraska N. G.——Dr. R. B. Harris has been appointed police surgeon of Omaha.

State Board Ruling Sustained.—The ruling of the State Board of Health in revoking the license of Dr. John T. Mathews, Omaha, charged with performing a criminal operation, has, it is reported, been sustained by the district court.

Sues for Lost Diploma.—Dr. George H. Whiteside, Omaha, has entered suit against the Adams Express Company for $20,000 damages for the loss of his diploma, which was sent to the State Board of Health at Lincoln for registration and which has not been returned to him.

NEW HAMPSHIRE.

Opening Exercises.—The opening lecture of the one hundred and eleventh annual session of the Dartmouth Medical School, Hanover, was given August 6, by Dr. C. B. G. de Nancrede of the University of Michigan, Ann Arbor.

The State Sanatorium Site.—At a meeting of the governor and council in Concord, August 8, the commission appointed to recommend a site for the state sanatorium for consumptives, reported in favor of a site comprising 300 acres of land, at an elevation of 1,300 feet, in Glencliffe in the town of Benton.

Eddyite Sentenced.—Herbert Whitney, an Eddyite and milkman of Concord, was arraigned on the charge of neglecting to report a case of scarlet fever to the authorities, and on August 16 is said to have been sentenced to pay a fine of $10 and costs and to be imprisoned thirty days in the House of Correction. The sentence was suspended on his promise not to repeat the offense.

Personal.—Dr. George W. McGregor, Littleton, was seriously injured recently in an automobile accident, suffering a fracture of the shoulder.——Dr. John H. Neal, Rochester, former state senator, has resigned as medical referee for Strafford County, and has been succeeded by Dr. Forest L. Keay, Rochester. Dr. and Mrs. Neal are taking a trip to the Pacific Coast.——Dr. Fred E. Bryar, North Sandwich, has been appointed deputy medical examiner for Carroll County.

NEW JERSEY.

Epidemic Diseases.—Typhoid fever continues to prevail in the Hospital for the Insane at Trenton. Several new cases have developed, and the authorities consider that there is grave danger of the disease spreading to the city.——Diphtheria has appeared in epidemic form in the Italian colony of Hammonton, and that section of the city has been quarantined.

Personal.—Samuel T. Atchley, Trenton, has been elected warden of the State Hospital for the Insane, Trenton.——Dr. John C. Beckwith, Atlantic City, surgeon and superintendent of the life guard corps, has been appointed police surgeon.——Dr. Daniel Millspaugh, Paterson, was attacked and seriously injured by a patient in Riverlawn Sanitarium recently.——Dr. Peter P. Rafferty, Redbank, has succeeded Dr. John W. Ward as medical director of the State Hospital for the Insane, Trenton.——Dr. Samuel English, Camden, has been elected medical superintendent of the New Jersey Tuberculosis Sanatorium, at Glen Gardner, and has assumed the duties of his position.

NEW YORK.

New York City.

Personals.—Dr. Carlos F. McDonald sailed for Europe August 21, and Dr. and Mrs. Joseph R. Davidson, August 24.

Trinity Hospital Closed.—This hospital, which was conducted by the Episcopal Sisterhood of St. Mary up to four years ago, and since by the corporation, has been closed for repairs and may not be reopened.

Children's Hospital.—Tenement house nurses are being instructed at this hospital in the work of saving babies and teaching mothers to care for their infants. This is being done at an expense of $15,000. This is a new and successful departure and the expense is being defrayed by John D. Rockefeller.

Contagious Diseases.—There were reported to the sanitary bureau, for the week ended August 17, 354 cases of tuberculosis, with 147 deaths; 201 cases of diphtheria, with 21 deaths; 175 cases of measles, with 11 deaths; 97 cases of scarlet fever, with 5 deaths; 68 cases of typhoid fever, with 13 deaths; 18 cases of whooping-cough, with 18 deaths; 5 cases of cerebrospinal meningitis, with 9 deaths; and 8 cases of varicella, a total of 926 cases and 224 deaths.

Typhoid Fever.—During the first half of 1907 there were reported 1,028 cases of typhoid, as compared with only 816 for the same period of last year. The east side of the city appears to be almost immune. In a report received last week it was shown that there were 28 nuisances still in the watershed. These will be corrected at once. Dr. Darlington says that the condition of the city from a health point of view could not be better. Whatever nuisances there are at present will be abated, and the watershed will be a model of its kind. The water supply on the north shore of Staten Island requires investigating. 25 cases of typhoid having appeared within ten days.

NORTH CAROLINA.

Personal.—Dr. Robert P. Noble, Selma, has been appointed surgeon for the Norfolk & Western Railroad, with headquarters at Marion.

Disease for June.—During June measles was reported from 33 counties; whooping cough from 29; scarlet fever from 9; typhoid from 62; malarial fever from 14; cerebrospinal meningitis from 8; mumps from 1; pneumonia from 25, and smallpox from 14.

June Mortality.—During June the report to the State Board of Health from 21 towns showed 313 deaths, equivalent to an annual mortality of 17.6 per 1,000. Diarrheal diseases are responsible for 74 deaths; consumption for 40; heart diseases for 26; violence, including suicide, for 14 and typhoid fever, pneumonia and brain diseases, each for 10.

OHIO.

Presents Medical Library.—Mrs. Buckingham has presented the entire library of her late husband, Dr. John L. Buckingham, Springfield, to the Warder Public Library. The trustees have appointed a committee of three physicians to organize and maintain the new enterprise as follows: Dr. Clarence H. Kay, president; Dr. Noah Myers, vice-president, and Dr. Thomas M. Reade, secretary. The library will be accessible to all physicians, pharmacists and dentists.

Additions to Faculty.—The following additions to the faculty of the Miami Medical College, Cincinnati, are announced: Dr. Derrick T. Vail, clinical professor of ophthalmology; Dr. Charles E. Caldwell, professor of principles of surgery and orthopedic surgery; Dr. James T. Heady, professor of medical economics; Dr. Frederick B. Samson, professor of chemistry and toxicology; Dr. John W. Murphy, clinical professor of laryngology; Dr. Joseph A. Hall, assistant to the professor of gynecology; Dr. C. S. Bond, lecturer on photo-micrography; Dr. Francis M. Hollingshead, instructor in physiology; Dr. R. E. Gaston, instructor in physiology; Dr. J. Ambrose Johnston, clinical lecturer in surgery; Dr. Frank B. Cross, clinical assistant in laryngology; Dr. A. J. Markley, clinical lecturer in dermatology; Dr. Samuel E. Allen, professor of hygiene; Dr. William D. Porter, professor of obstetrics, and Dr. Mark A. Brown, professor of physical diagnosis.

Unlawful Practitioners Punished.—"Professor" Mayo, who was arrested at Bucyrus July 11, charged with practicing medicine without a license, is said to have been fined $100 and costs on each of two charges, and to have gone to jail in default of payment.——The license of Dr. Carey S. Ferris, Cleveland, charged with quackery, is said to have been revoked by order of the Probate Court.——The appeal of W. E. Remyen, Uhrichsville, against the revocation of his certificate by the State Medical Board for alleged moral turpitude, has been denied.——The certificate to practice medicine granted to Dr. Joseph E. Wenman, Lorain, is said to have been revoked by the secretary of the State Board of Medical Examination and Registration July 3, on the charge of having made illegal use of the mail by sending obscene literature.——Dr. James A. Ambrose, Dayton, charged with performing a criminal operation which resulted in the death of a woman, was found guilty and is reported to have been sentenced to imprisonment for 18 months in the state penitentiary.

PENNSYLVANIA.

State Society Meeting.—The fifty-seventh annual meeting of the Medical Society of the State of Pennsylvania will be held in Reading, Sept. 23-26, 1907. The preliminary program gives every indication that an active and interesting meeting will be held.

Society Meetings.—The physicians of Sullivan County met at Dushore, August 9, and organized a county medical society. Drs. George D. Nutt, Williamsport, and Cyrus L. Stevens, Athens, secretary of the state society, were present and assisted in the organization of the society. The following officers were elected: President, Dr. Martin E. Herrman, Dushore; secretary, Dr. William F. Randall, Dushore; treasurer, Dr. Philip G. Biddle, Dushore; delegate to the state medical society, Dr. Arthur J. Bird, Overton; alternates, Drs. H. Irvin Woodhead and John R. Davis, Forksville, and censors, Drs. Justin L. Christian, W. H. Randall, Dushore, and J. R. Davis, Forksville.——The second annual meeting of the Fifth Censorial District Medical Society was held in Carlisle, August 13, when the following officers were elected: President, Dr. James Evelyn Pilcher, Carlisle; vice-president, Dr. Charles Rea, York, and secretary, Dr. John J. Coffman, Scotland (re-elected). An address on "Medical Organization" was delivered by Dr. Isaac C. Gable, York, president of the state association.

Philadelphia.

Personal.—Dr. J. Leslie Davis was recently operated on for acute hernia.——Drs. M. J. Horn and J. B. McAvoy, resident physicians in the Medico-Chirurgical, were thrown from the hospital ambulance August 19 and sustained severe contusions.

To Repair Naval Hospital.—As a result of the visit of Surgeon-General Rixey to the Naval Hospital located here, it is reported that several alterations and improvements will be made in this institution. Dr. Rixey also visited the Navy Yard and will recommend a new dispensary for the men at League Island.

Diphtheria on Train.—It was discovered by the board of health that three children suffering with diphtheria were brought to this city from New York, August 22. The health authorities have instituted stringent measures to prevent a spread of the disease and nine cars of the Pennsylvania Railroad were fumigated.

Health Report.—The total number of deaths reported for the week ended August 24 reached 489. This is a decrease of 13 from the number reported in the preceding week and an increase of 8 over the number reported in the corresponding week of last year. The principal causes of death were: Typhoid fever, 14; pertussis, 6; diphtheria, 11; consumption, 46; cancer, 31; apoplexy, 17; heart disease, 52; tetanus, 2; acute respiratory disease, 19; enteritis, 94; Bright's disease, 26; premature birth, 9; congenital debility, 17; suicide, 4; accidents, 9, and marasmus, 12. There were 190 cases of contagious diseases reported, with 26 deaths, as compared with 148 cases and 17 deaths reported the preceding week. There was an increase of 21 cases of typhoid fever over the previous seven days.

School Inspections.—Reports just completed by the health bureau show that one out of every four children in the elementary school is afflicted with some physical or mental defect. The report of the medical inspectors shows that 135,959 children were examined and that 25.9 per cent. were afflicted with some ailment. In that classification were included 16,654 out of 67,464 boys, or 24.6 per cent., and 18,660 out of 68,495 girls, or 27.2 per cent. A further analysis showed that of the 135,959 children inspected 78,732 were promoted on their class standing last June without examinations. Of these, 18,644 or 23.6 per cent., were in the medical defective class, while 57,227 failed to attain the exemption standard and had to take the regular examination. Of these, 18,226 or 31.8 per cent., were rated as medically defective. The exempted children included 37,920 boys and 40,812 girls, while the non-exempted included 29,944 boys and 27,683 girls. Following is the statistical table showing in detail the causes of the defects noted in the exempted and non-exempted classes:

Defect.	Exempted children.	Non-exempted children.
Eye	8,105	7,730
Ear	965	1,087
Nose	1,258	1,459
Throat	4,815	4,027
Skin	2,400	2,166
Orthopedic	405	348
Mental	68	610
Miscellaneous	628	799
Totals	18,644	18,276

TEXAS.

Dengue Under Control.—It is reported from Corpus Christi and Brownsville that the dengue situation is well in hand. The physician of Bee County has accordingly advised against quarantine measures.

Impure Milk.—Charges have been filed by the Board of Health of San Antonio against 13 dairymen of the city, for selling impure milk.

Personal.—Dr. James Byars, Columbus, has returned from a trip to South America.——Dr. Jesse M. Pace, Dallas, has resigned as a member of the board of health.

Medical Board Organized.—At a meeting of the Medical Examining Board for the State of Texas, August 16 and 17, Dr. Marquis E. Daniel, Honey Grove (eclectic), was elected president; Dr. Thomas J. Crowe, Dallas (homeopath), vice-president, and Dr. Garland B. Foscue, Waco (regular), secretary. The first meeting of the board will be held October 21 at Fort Worth.

UTAH.

Pre-Medical Course.—The University of Utah, Salt Lake City, announces that students desiring to secure the degree of doctor of medicine may take the first two years of their work at the university, and that their work will be given full credit by the leading medical colleges of the country.

Sanitary Condition of Southern Utah.—The State Medical Inspector, F. E. Clark, reports that in general the sanitary conditions of towns in the southern part of Utah are very bad; that the water is of inferior quality; that little attention is paid to the cleaning of corrals or outhouses, and that there are a great number of sloughs in which a great many mosquitoes are bred. Many towns get their drinking water from small rivers into which masses of sewage are poured.

WEST VIRGINIA.

Antituberculosis League.—A local branch of the West Virginia Antituberculosis League has been organized at Grafton, with Dr. Thomas F. Lanham, president, and Dr. Joseph H. Doyle, recorder. Dr. Wallace Longstretch, general field manager of the league, will visit 17 cities in the state during September in the interest of the organization.

Personal.—Dr. Fleetwood, Clarksburg, medical examiner for the B. & O. R. R., has been transferred to Pittsburg, Pa., and Dr. W. B. Rogers, formerly medical examiner at Clarksburg, has been transferred to Baltimore.——Dr. Ed. Cummings has been placed in charge of the department of diseases of the lungs in the Hinton hospital.

WISCONSIN.

Medical Lobbyists Expense.—Milwaukee Medical College is said to have filed in the office of Secretary of State a schedule of the expense, amounting to $1,309.50, incurred in its fight against the bill creating a college of medicine in the University of Wisconsin.

Smallpox.—Several cases of smallpox have occurred in the Glasgow and Hardie's Creek settlements near Galesville.——Seven cases of smallpox have been discovered in the town of Milwaukee, and Health Commissioner Bading complains that proper care is not being taken in their isolation.

Hospital Car in Service.—The hospital car of the Milwaukee Street Railway, built and equipped according to the plans prepared by Dr. Charles H. Lemon, was put into commission August 23. During the day 26 patients were treated by Dr. Lemon. There were no serious cases and no accidents.

Chiropractic Acquitted.—A jury in La Crosse is said to have returned a verdict, August 14, finding Shentago Morimubo, a so-called "chiropractic," not guilty of breaking the state law which compels the licensing of surgeons and osteopath physicians. The defendant was immediately rearrested on a new charge of practicing the art of healing and receiving money as a physician.

Personal.—Dr. J. A. Paterson has purchased the interest of Dr. George B. Taylor in the Taylor Institute, Iron River.——Dr. U. J. Tibbitts, Prospect, is reported to be critically ill with septicemia.——Dr. Albert H. Brundage, Milwaukee, professor of toxicology in the department of pharmacy, Marquette University, has been appointed to the chair of physiology, and Dr. Arthur J. Somers has been appointed a member of the faculty of the institution.

Pre-Medical Courses.—The Lawrence University announces that a pre-medical course of two years will be introduced in that institution, which will include the subjects of the first two years in medical colleges.——The new medical course in the University of Wisconsin will open with the fall term. No clinical work is to be given. The department of pathology and pharmacology will take up the manufacture of serum and antitoxin.

GENERAL.

Manila Free from Disease.—The report of the Manila bureau of health shows that for the first six months of the year no epidemic disease had been reported, and states that this is the first time such conditions have been on record. During June there were fewer deaths in the city than at any time since the American occupation.

The Yellow Fever Situation in Cuba.—Lieut.-Col. Blair D. Taylor, chief surgeon at Marianao, reported to the War Department, August 22, that no new cases of yellow fever had occurred at Cienfuegos, but that there was one new case at St. Nicolas. In a report from Governor Magoon to the War Department, the charge is made that there has been a most complete disregard of the treaty obligation, under which the Palma government agreed to keep the island clean and healthy, so that it should no longer be a source of danger and infection to the United States and other countries. On August 26 Governor Magoon signed a decree nationalizing the sanitary service; that is, taking the municipal sanitary service out of the hands of the local authorities and placing it under the control of the department of sanitation in Havana. It has been found impossible under diverse municipal sanitary regulations to stamp out yellow fever. On August 26 five new cases of the disease were reported from Cienfuegos, making a total of ten in the city. All but one of the patients are Spaniards. The last of the soldiers attacked by the disease was discharged from the hospital August 26.

Society Meetings.—At the annual meeting of the National Fraternal Congress in Buffalo, N. Y., August 20, the following were elected officers of the medical session: President, Dr. George G. McConnell, Chicago; vice-presidents, Drs. Jane W. Carroll, Buffalo, N. Y., and Wallace K. Harrison, Chicago; secretary, Dr. E. Franc Morrill, Chicago, and treasurer, Dr. Talbert Sleneau, Port Huron, Mich.——At the regular quarterly meeting of the Fairfax Medical Association, held in Alexandria, Va., August 2, the following officers were elected: Dr. George Tully Vaughan, Washington, D. C., president; Drs. Llewelyn Powell, Alexandria, and Frederick M. Brooks, Swetnam, Va., vice-presidents; Dr. Edwin L. Detwiler, Herndon, treasurer, and Dr. Robert L. Wilkins, Alexandria, secretary.——The thirty-third annual meeting of the Mississippi Valley Medical Association will be held in Columbus, Ohio, October 8-10, under the presidency of Dr. H. Horace Grant, Louisville, Ky. The orator in medicine will be Dr. George F. Butler, Chicago, and the orator in surgery, Dr. Frank D. Smythe, Memphis, Tenn. The association is furthering the work of medical research by offering a prize of $100 for the best original essay on some medical or surgical subject. The committee to award this prize is composed of Drs. Hugh T. Patrick, Chicago, Charles H. Hughes, St. Louis, and Albert H. Cordier, Kansas City, Mo. Dr. Florus F. Lawrence is chairman of the committee of arrangements.

FOREIGN.

Cholera in China and Japan.—Cable reports state that cholera has broken out in the Chinese quarter in Shanghai and that several Europeans also have succumbed to the disease. Twenty-five cases are reported from Moji, in southern Japan, and several other Chinese and Japanese coast towns are said to be infected.

Australasian Medical Congress.—The eighth session of the Australasian Medical Congress will be held in Melbourne Oct. 19-24, 1907. The council of the University of Melbourne has granted the use of the university buildings and the government of Victoria has undertaken to print the transactions of the congress. Special meetings will be devoted to (a) the relations of the medical profession to hospitals, and (b) syphilis.

Medical Inspection of School Children in South Australia.—The *Australasian Medical Gazette* states that the government of South Australia is beginning to recognize the value of healthy children as an asset to the state. The minister of education, the Hon. T. Price, recently declared his intention of seeking parliamentary assistance in his crusade against defective eyesight among school children. He wishes to have a physician appointed to examine the eyes of every child in the schools. A certificate will then be given stating the condition of the child's sight, and if it is defective, in what way; this will secure the necessary attention to the defects discovered. The hearing is also to be tested, and that will incidentally, of course, reveal the presence of adenoids, which are generally associated with defective development. Mr. Price recognizes that this procedure will cost money, but, as he says, it is necessary to keep "the best asset the state can have—good healthy children, and thereafter healthy citizens."

British National Society for the Prevention of Cruelty to Children.—At the annual meeting of the Manchester and District Branch of the National Society for the Prevention of Cruelty to Children, July 23, according to the report in the *British Medical Journal*, some interesting statistics were given. During the year 1,540 cases, involving the welfare of 4,723 children, had been investigated. Of these, 1,982 were known to be insured for over £11,000. Of the 1,540 cases inquired into, 1,480 were for neglect, 40 for other forms of ill-treatment, and 10 for exposure for begging purposes. Warnings were given in 1,334 cases, 101 persons were sent to prison, 10 bound over, 7 reprimanded, 2 dismissed, and one case was withdrawn. The lord mayor, who presided, in moving the adoption of the report, said that he was informed that 95 per cent. of the cases of neglect investigated by the society were due to intemperance. Mr. R. J. Parr, in seconding the resolution, said that the society is doing an educative as well as a preventive work, and that he believes that most of the deaths are caused by ignorance on the part of parents. In the first few years of the society's existence 45 per cent. of the cases dealt with were for brutality, but last year the proportion of cases of gross brutality was only 8 per cent., and he claimed that much of this improvement is due to the society's methods.

Special Pay for Medical Officers in India.—The government of India has announced its intention of granting special pay to officers of the Royal Army Medical Corps of the Indian Medical Service. The *Lancet* states that the allowance will be payable to officers below the rank of lieutenant-colonel for special sanitary, surgical or medical work done for the state which it is not in the power of an ordinary medical officer to perform with the same efficiency as the specialist. It will not be a personal allowance but will be granted only to incumbents of certain specified appointments. There will be 105 specialist appointments in India, each carrying pay at the rate of Rs.60 a month. Of these, fifty-five will be allotted to the Royal Army Medical Corps and fifty to the Indian Medical Service in military employment. The special subjects are as follows:

V 4
190

(a) prevention of disease (including parasitology, bacteriology, and preventive inoculation), forty appointments; (b) dermatology (including the prophylaxis, treatment of, and instructional measures in connection with venereal diseases), ten appointments; (c) advanced operative surgery, twenty appointments; (d) ophthalmology, ten appointments; (e) electrical science (including skiagraphy), ten appointments; (f) mental science, two appointments; (g) otology, laryngology and rhinology, three appointments; and (h) midwifery and diseases of women and children, ten appointments.

LONDON LETTER.

(From Our Regular Correspondent.)

LONDON, Aug. 17, 1907.

Outbreak of Cerebrospinal Meningitis in Belfast.

At the recent meeting of the British Medical Association, Dr. A. Gardner Robb, in the section on medicine, made some observations on the outbreak of cerebrospinal meningitis in Belfast. Of 230 cases which occurred there, 160 ended fatally. Three different kinds of serum were used in treatment without beneficial effect. Phenacetin seemed to give the greatest relief from headache, but no relief was obtained from the use of mercury, iodids, bromids, quinin or the salicylates.

Alcohol and the Medical Profession.

A meeting of the British National Temperance League was held in Exeter during the meeting of the British Medical Association. So many pronouncements have been delivered by physicians in Great Britain during the past few months on the value of alcohol, that the subject is becoming somewhat tiresome. The extremists on both sides press their views and the moderate man is severely handled by the opponents of alcohol if he ventures to express opinions which in any way clash with theirs. Dr. Davy, president of the association, said that notwithstanding the fact that most temperance advocates usually talk the most unscientific twaddle, and although he is personally in favor of light beer as a beverage rather than tea, he emphatically supports the principle of temperance. The general attitude of all the speakers was adverse to alcohol in any form.

Free Meals for Children.

Mr. C. F. G. Masterman, M.P., speaking on the subject of free meals for children, pointed out that the state has now taken on itself the responsibility of seeing that every child in the elementary schools should have sufficient food—breakfast or dinner, as the case may be—to enable it to carry out its studies. The weakness of the act, however, is obvious in that it is not universal, and the result on the whole has not been encouraging.

Critical Position of the New Sydenham Society.

The New Sydenham Society, which has done valuable work for half a century in translating important medical works from foreign languages, is in a critical position. It has been a prosperous as well as a useful society. Twenty years ago its volumes in their well-known bindings might be seen on the shelves of all doctors who aspired to a good library. The works of the great foreign masters, such as Trousseau, Charcot and Virchow, were thus made available to English readers. But *tempora mutantur et nos mutamur in illis*. The modern developments of medical journalism have to some extent though by no means completely rendered the work of the society superfluous. The authorities of to-day publish their views to a greater extent in periodicals than used to be the custom, and the important articles which appear in foreign journals are translated and abstracted in English journals to an extent not known before. Moreover, the enormous output of text-books with their rapidly succeeding editions competes heavily with the monograph, however good. Finally, this is not an age productive of great masters, whose writings are reverently cherished and conned for decades. This is an age of mediocrity, and men want to read of the latest discoveries, or, perhaps one should say, alleged discoveries, which have not yet been replaced by views equally ephemeral. As a consequence of the changed conditions of publication, the New Sydenham Society has in recent years turned its attention from the translation of monographs and essays to the publication of a valuable atlas of "Illustrations of Clinical Medicine and Surgery." In 1906 the society issued two double fasciculi illustrating the subjects of variola, vaccinia and varicella, and a printed volume containing selected papers on the parasites of syphilis and smallpox. In the current year they have issued an atlas on gynecologic subjects. The society has still 900 members (who pay a subscription of 85 annually), but the production of the atlases is too costly for the income. At a meeting of the council held in London it was decided to recommend the winding up of the society at the annual meeting.

The Royal Commission on Tuberculosis.

This commission has issued another bulky book of over 700 pages on "The Pathogenic Effects of Bovine Viruses." Different species of animals were inoculated. In general, it was found that the goat is more susceptible to the bovine bacillus than the calf. Tuberculosis is readily produced in pigs, but is not necessarily fatal. The chimpanzee and the various species of monkeys are highly susceptible; only one lived 100 days after inoculation. The dog was found very resistant to subcutaneous inoculation, but less so to intraperitoneal. Feeding experiments were also carried out with different species of animals. All, except the rat and fowl, developed tuberculosis. The young pig was found the most susceptible animal and the adult dog the most resistant. The goat was found less susceptible than the pig, and the calf less than the goat. Cats were much more easily infected than dogs. General progressive tuberculosis was set up in dogs with difficulty. Several rats were fed with enormous numbers of tubercle bacilli and showed nothing beyond some minute necrotic foci in the mesenteric glands. In the few experiments performed with fowls no disease at all was produced.

The Pure Milk Bill.

The so-called pure milk bill for London is making progress. The bill in question is really termed the London County Council's General Powers Bill, the most important of which is intended to prevent the sale of tuberculous milk. The bill is a purely London one. What are called model clauses passed is a purely London one. What are called model clauses passed in various parts of the country, but the London County Council and the county councils outside the metropolitan area are agreed on certain modifications which the Local Government Board opposed. The most encouraging symptom of the situation in Great Britain as regards milk is that there is a general demand for national legislation to improve the supply.

Brain Exhaustion.—C. Meyers, Toronto, in the *Canada Lancet*, August, 1907, states that the differential diagnosis of brain exhaustion, while at times easy to make, is at other times one of the most difficult problems in medicine. This is especially true in the somatic form of the disease in which the diagnosis between an organic and functional lesion becomes at times extremely difficult.

Prophylaxis of Plague.—The value of the domestic cat as a preventive against plague has been brought forward by Lieut.-Col. A. Buchanan, I. M. S., whose suggestion is referred to by the *Journal of Tropical Medicine and Hygiene*. Buchanan took a cat census of certain villages that enjoyed exceptional immunity from plague and found that those villages harbored an exceptional number of cats. Of course a corollary to the proposition "more cats, less plague," would be that of "more cats, fewer rats."

The Sanitary Importance of Ice in Hot Climates.—The Englishman living in a climate which, while often raw and cold, is seldom too hot, is apt to overlook the importance of a supply of ice when he passes into other and totally different climatic environments. This, according to the *Journal of Tropical Medicine and Hygiene*, is not the case with the American, who, being used to a wider range of temperature, fully recognizes the value of ice in hot weather from an instinctive knowledge of its sanitary importance. The Anglo-Indian is the greatest sinner in respect to ignoring the sanitary importance of ice. While he no longer plays cricket under the torrid heat of a Calcutta sun, in a top hat, he still braves the extreme temperature without the alleviation of either ice or punkahs. The trouble is that from the (British) public and official point of view, ice is a mere luxury, whereas, it should be regarded as an essential of well-being in the tropics, provided, of course, that it is not used improperly. They did not "get on very well without it in the good old times." On the contrary, they grew ill and died. There are many parts of Britain's tropical empire where ice is still unobtainable, notably on the African coasts. There is no doubt that the improvement in diet and the increased efficiency of the community would, many times over, pay for the initial cost of ice machines and cold-storage plants.

Therapeutics

[It is the purpose of this department to outline an up-to-date management of disease, to suggest scientific treatment for diseased conditions, and to present prescriptions that are simple, useful and palatable. Prescriptions are written in both the metric and apothecaries' systems, but the amounts of the ingredients are NOT exact translations of one system into the other, but quantities convenient for pharmacist and physician. It should be understood that solids are weighed in grams or fractions of grams, while liquids are measured in cubic centimeters; that a teaspoon holds five cubic centimeters, i. e., more than a fluid dram, hence a 100 cubic centimeter preparation will contain twenty doses.]

Chronic Malaria.

Chronic malarial poisoning is a chronic condition of malaise and debility with more or less anemia, often with an enlargement of the spleen, and generally caused by a previous severe or several mild attacks of malarial infection.

In patients who have repeatedly had malaria it is not easy to eradicate the disease. The peripheral blood may show no plasmodia, but blood obtained by splenic puncture will show these germs. After a considerable period without quinin irregular muscle aches and pains, headaches and malaise occur, and the peripheral blood may then show the germs. Enormous doses of quinin may be taken and tolerated, and still on stopping it, in a short time the symptoms again occur, the spleen harboring these germs. These patients should receive a week of quinin treatment with small doses of quinin (2 or 3 grains, three times a day) once a month for four or five months. Small doses of arsenic (2 milligrams or 1/30 gr. of the trioxid of arsenic, three times a day) taken for a long time seems to be of marked benefit in these cases. Ammonium chlorid in doses of 50 centigrams (7½ gr.) three times a day also seems to tend to aid in reducing the enlargement of the spleen in these cases. Chronic malaria can be present without any evidence of enlarged spleen, however. If the spleen tends to remain enlarged from malarial poisoning, every possible means to reduce the enlargement, the splenic cold douche, electricity, *x*-ray treatment and change of climate, should any and all be tried, as the condition is serious and it may lead to some serious blood disease. Every means possible should be taken to build up the system and to ameliorate any anemia that may be present.

Patients who do not become immune to malarial infection even under the repeated use of quinin should not live in malarial districts. See article on malarial fever in department of Therapeutics, THE JOURNAL, Aug. 3, 1907, page 427.

Latent Malarial Infections.

Dr. Charles F. Craig, assistant surgeon U. S. Army (*Yale Med. Jour.*, June, 1907), makes a distinction between chronic malarial infection and latent malarial infection. He understands the latter to be an infection in which the malarial plasmodia may be demonstrated to be present in the blood of an individual, but in which no clinical symptoms of the disease of sufficient gravity to attract attention are to be observed. "The term should not be confined to those instances in which no symptoms of malaria have ever been present, for if the parasites be present in the blood in recurrent cases between the attacks, the disease is as truly latent as it may be before the initial one." He recommends the administration of quinin for a long period in this condition.

Sunstroke.

A method of treating this condition advocated by Captain W. A. Heppolette of India is referred to by Captain Foulds, in the London *Lancet*, Dec. 22, 1906. The patients suffering from insolation are stripped, put on cots, and one attendant pours cold water over them while another rubs ice over the body, and a third gives an enema of a quart of iced water, and this is repeated every ten minutes until the mouth temperature drops to 102 F. Ice water enemata are also advocated in cases of heat prostration in which sunstroke has not actually taken place as possibly tending to abort collapse from heat.

If conditions are satisfactory and a large bathtub can be had, there is probably no better method of treating insolation than by immersing the patient, with proper support for his head, in a tub of water which is constantly kept cold by additions of ice. When a tub is not available, ice-water enemata should certainly be tried. Whatever the cold application, care must be taken that when the temperature begins to drop the application is not continued too long. During cold applications wet, iced cloths or an ice cap must be kept constantly on the head.

If the patient is strong, sturdy and full-blooded, venesection had perhaps better be done, especially if the face is flushed and dark. Some advise after venesection the intravenous injection, or hypodermoclysis of physiologic saline solution. Whether or not the heart requires stimulation with hypodermics of strychnin, will depend entirely on the case.

Gelatin Capsules.

It is a sad commentary that the very gelatin capsules with which we endeavor to pleasantly administer bad tasting drugs should possibly contain the germs of tetanus, as stated by Dr. Wiley in the *Dietetic and Hygienic Gazette*, May, 1907. Dr. Wiley states that the gelatin factories are the dirtiest in the world; that this gelatin is sometimes made in glue factories; that the stuff that is not fit for glue is made into gelatin, and that this gelatin is used in ice-cream and candies, and to make capsules for the administration of medicine. He also states that "there is plenty of wholesome raw material for making clean, pure gelatin."

It would be perfectly easy to investigate the purity of gelatin capsules by asking the druggist of whom he buys his capsules, and then from inquiry find where these capsules are made. Next, some of the members of the American Medical Association who live in the towns where these capsules are manufactured could be requested to investigate the factories. If the gelatin at these factories was found to be impure and dirtily made, a few letters written to THE JOURNAL and published, public opinion and the Food and Drugs Act could obtain pure, clean capsules for the administration of drugs.

It is indifference and neglect of things that are positively known to be objectionable that allow the American people to be imposed on.

Dengue.

Dr. P. M. Ashburn and Dr. Charles F. Craig, surgeons of the United States Army (*New York Med. Jour.*, June 15, 1907), could find no organisms in the blood in this fever and found no specific organism in cultures, but they can inoculate dengue into healthy men by using blood from dengue patients. They think the disease can probably be transmitted by the mosquito, and state that the period of incubation is about three and one-half days. Dengue is not contagious, but is infectious, like yellow fever and malaria. They found a normal red blood count, with a diminished total white count (mostly a diminution of the polymorphonuclears with an increase of the small lymphocytes).

The symptoms of dengue or break-bone fever develop suddenly, and are principally pains and aches referred to the muscles and bones; especially is there severe headache and lumbar backache. The pain may be excruciating. The fever may rise to a considerable height, but often is not high; it lasts a few days, and during the remission an erythematous rash appears on the body. There may also be at this time some enlargement of the lymphatic glands in the neck, axilla and groin. The eruption may last a day or two, to be followed by a second, but less, rise in temperature for a day or two, when convalescence develops. During the feverish period all the symptoms of a general fever are present.

There is no specific treatment but absolute rest in bed, even if the disease is mild, and protracted rest even in convalescence seems to render the disease milder and hasten the termination. One of the coal-tar products, as antipyrin, acetanilid or phenacetin, is needed for the aches and pains, and if these are severe morphin must be given. A useful combination of salol and acetphenetidin (phenacetin) is as follows:

R.	gm.		
Acetphenetidini	1	50	gr. xxv
Phenylis salicylatis	1	50 or	gr. xxv
Caffeinæ citratæ		25	gr. v

M. et fac chartulas 5. Sig.: A powder every three hours. Or:

R.	gm.		
Antipyrini	4	or	3i

Fac capsulas 10. Sig.: Two capsules, with plenty of water, and repeat dose in twelve hours, if needed.

If the headache is severe and there is much fever, an ice cap is indicated, and if the fever persists high, cold sponging must be done. A saline cathartic is generally indicated. The diet depends on the amount of fever present—a low diet if there is much rise in temperature.

If the headache is intense and there are meningeal symptoms, bromids or even chloral may be given as:

R.	gm. or c.c.		
Potassii bromidi	20	or	3v
Aquæ	100		fʒiii

M. Sig.: Two teaspoonfuls (10 c.c.) or two fluidrams, in water, and repeat if needed. Or:

R.	gm.		
Chlorali hydrati	5	or	3ii
Syrupi pruni virginianæ	50		fʒiii

M. Sig.: Two teaspoonfuls (10 c.c.) or two fluidrams, in water, and repeat if needed.

If there is much prostration, small doses of alcohol may be given.

Gelsemium in small doses, preferably the fluidextract, or belladonna, best given in the form of the tincture, have been used successfully in stopping the pains.

Achylia Gastrica.

Dr. Frank Billings, of Chicago (*Ill. Med. Jour.*, July, 1907), states that Einhorn of New York, in 1892, suggested the above name for the condition in which there is entire failure of secretion of gastric juice, in other words, in cases where there is "entire absence of hydrochloric acid, pepsin, rennin, etc."

The treatment, when a neurosis seems to be the cause of the condition, consists, he states, in an attempt to improve the general nervous tone of the individual and by increasing the general nutrition by frequent small feedings of food of such a character that the unavoidably undigested remnants which may remain in the intestine will cause as little disturbance as possible. The use of bitter tonics to attempt to stimulate the stomach secretions is of doubtful benefit. The tincture of nux vomica in 15 or more minim doses before food is taken can do no harm and may be of possible benefit.

R.	c.c.		
Tincturæ nucis vomicæ	20	or	fʒv
Tincturæ cinchonæ compositæ ad	100		fʒiii

M. Sig.: A teaspoonful (5 c.c.), a fluidram, in water, three times a day, before meals.

Billings says that one can not give hydrochloric acid in sufficient amount to compensate for the absence of its secretion, but perhaps enough may be given to control partially the mechanism of the pylorus. From 15 to 30 minims of dilute hydrochloric acid well diluted with water should be used after the feedings.

R.	c.c.		
Acidi hydrochlorici diluti	20	or	fʒv
Aquæ ad	100		fʒiii

M. Sig.: A teaspoonful (5 c.c.), a fluidram, in water, three times a day, after meals.

The acid may also serve as a stimulant, Billings asserts, to the secretion of the pancreatic and intestinal ferments.

Changes in the Urine Due to Drugs.

"Drugs that increase the amount of urine cause it to be lighter.

"Drugs that irritate the kidneys cause the urine to be darker.

"Methylene blue causes the urine to be green in color, if it is acid.

"Phenol may cause the urine to be almost black.

"Rhubarb may cause the urine to be brown (same appearance as bile).

"Santonin causes the urine to be yellow, if acid; purple, if alkaline.

"Senna may cause the urine to be red, if acid; yellow, if alkaline.

"Sulphonal and trional may cause the urine to be very dark."—Osborne's "Materia Medica and Pharmacology."

Many drugs interfere with urinary tests. Methylene blue in the urine will allow a precipitate with Esbach's test for albumin on account of the picric acid it contains. Balsam of copaiba, turpentine drugs, and sometime santal oil often allow a precipitate with nitric acid. Terpin hydrate may cause the urine, on boiling and on the addition of nitric acid, to give a precipitate without albumin being present. The tincture of myrrh can also give a precipitate with heat which may not be albumin.

A number of drugs, or even biproducts and coloring matters absorbed from the intestine in serious constipation or intestinal fermentation, can cause reduction of copper in Fehling's test, and even in small amounts may cause decolorization of the copper solution. Such urines must be tested by other methods before it is decided that glucose is present.

Pharmacology

Kutnow's Powder—Patent or Proprietary?

The term "patent medicine" has been applied, rather loosely, to those nostrums sold and exploited directly to the public, while the name "proprietary" has been given such preparations as are advertised only to the medical profession. As has been many times exemplified by reports in THE JOURNAL, the distinction is often a very fine one and the dividing line frequently reaches the vanishing point.

It is not unusual, for instance, for "proprietary" preparations to be foisted on the medical profession until a certain number of testimonials (of doubtful value, it is true, but still testimonials) have been ingeniously wheedled out of physicians and the product rather generously prescribed. When this objective point has been reached the manufacturer comes into the open and advertises the nostrum to the public direct and the testimonials previously given for the "proprietary" are used as advertising assets for the "patent medicine."

Then again there are certain preparations which are "proprietaries" or "patent medicines" according to the location. On one side of the Atlantic the product is advertised to physicians only, while on the other side it runs indiscriminately on the billboards and in the newspapers. One of the best examples of this last class is Kutnow's Powder. In England, where it originated, this preparation which "dissolves and eliminates uric acid," is consistently lined up with Beecham's Pills and Pink Pills for Pale People. Full-page newspaper advertisements announce the fact that free samples will be

"SENT TO ALL APPLICANTS."

In the United States, however, Kutnows have learned from their wide advertising experience that a cheaper and surer way of introducing a nostrum to the public is to advertise it to the medical profession only. By means of advertisements in medical journals (whose space is much less expensive than that of the daily papers) and the liberal distribution of samples

"SENT FREE TO PHYSICIANS ONLY"

the medical profession becomes the unpaid "barker" for the

nostrum manufacturer. At present, therefore, Kutnow's Powder is—in the United States—an ethical(!) "proprietary."

There exists in this country, as most of our readers know, an organization of "patent medicine" manufacturers whose "reason for being" is to get full value received for the $40,000,000 paid annually in advertising nostrums in the newspapers of the country. This organization is known as the Proprietary Association of America. The now familiar "red clause" in the advertising contracts by which the newspaper forfeits its contract if state laws are enacted that are inimical to the "patent medicine" interests, is a creation of this organization and has been most effective in making the newspapers the unpaid lobbyists of the nostrum interests. The "silence clause" is another "joker" in the contracts by which the agreement is cancelled if matter detrimental to the nostrum "is permitted to appear in the reading columns" of the paper. It is little wonder that with such weapons the "patent medicine" manufacturer has assumed an arrogance that is as disgusting as it is serious.

Great Britain, too, has its "patent medicine" men's organization, which is known as the Proprietary Articles Trades Association. Of both these honorable bodies Mr. S. Kutnow of Kutnow Brothers, Ltd., is, or was, a conspicuous member. At a recent meeting of the British organization, Mr. Kutnow worked himself into a fine frenzy of indignation because of some articles that had appeared in the *Pharmaceutical Journal* of London on the subject of "Secret Remedies and Proprietaries." As these articles did not specifically mention Kutnow's Powder, and as criticism was directed against only those preparations as were most disreputable, it is evident that Mr. Kutnow appraises his own product at its face value. He gave his opinion of the *Pharmaceutical Journal* and told the meeting that when the advertising man for that journal solicited advertising he refused to have any more dealings with him owing to the articles that had appeared in the *Pharmaceutical Journal*. He expressed himself as quite independent of any newspaper or journal, and able to take care of himself.

Therein Mr. Kutnow is mistaken; he is not independent of newspapers and journals. On the contrary, he, and others of his ilk, are most subserviently dependent on them. Let reputable papers and medical journals refuse, for but one year, to carry the high-flown advertisements of his Anglo-American Patent-Proprietary, and his firm would perforce seek some worthier, if less profitable, line of business.

The editor of the *Pharmaceutical Journal* resents Mr. Kutnow's "implied assumption that by inserting paid announcements in the advertising columns of a newspaper, he or any one else, can dictate the policy of that organ."

The *Pharmaceutical Journal*, it should be said, is the official organ of the Pharmaceutical Society of Great Britain, and is the most influential organ of the drug trade in the British Isles. It is refreshing to note, in these days of "canned" editorials and paid "write-ups" masquerading as original articles, that there is still to be found a journal that can not be bought.

One wonders whether a large experience in the advertising world, and especially his membership in the Proprietary Association of America, has unconsciously led Mr. Kutnow to assume that muzzling the press is one of the perquisites of the large purchasers of advertising space.

Carcinoma in Calcutta.—In the report of the Medical College Hospital, Calcutta, given in the *Indian Medical Gazette*, it is stated that 59 cases of cancer were analyzed. Of these 76.3 per cent. were males and 23.7 per cent. females. The sites affected differ largely from those given in western statistics. Thus, the penis was affected in 28.8 per cent. of the cases; the breasts in 11.8 per cent.; the cheek, lower jaw, tongue and liver, each, in 6.7 per cent.; the upper lip, pancreas and stomach, each in 5 per cent.; the upper jaw, rectum and neck, each in 3.3 per cent., and the pharynx, thigh, larynx and epiglottis and gall bladder, each in 1.6 per cent. of the cases. Of the cases of cancer of the penis all the patients were Hindus, 29 per cent. of whom gave a history of congenital phimosis. The native habit of chewing betel leaves with lime may have some causal relationship to the frequency of cancer of the mouth.

Correspondence

The Preparation of the Specialist.

NEW HAVEN, CONN., Aug. 17, 1907.

To the Editor:—Dr. Shambaugh's article on "The Preparation of the Specialist" in THE JOURNAL, Aug. 17, 1907, especially as regards what he says about the granting of the Ph.D. degree in medicine, deserves great applause and commendation. It advances a thought that many a progressive man has felt, but failed to express. It does indeed seem peculiar that universities should grant advanced degrees for work done in almost any of the sciences, except in medicine, as if to take no cognizance of its deep and exhaustive sciences. And yet, at present, fully three-fourths of all the research being carried out all over the world is in medicine. Again, of all the scientific journals published, fully three-fourths are devoted to the medical specialties and their fundamental sciences. In every respect, every one of the medical specialties stands in the first rank and on a par with mathematics, history, zoology, botany, etc. Still, where is the university which offers courses toward the Ph.D. degree for investigations in internal medicine, in diseases of the eye, ear, nose or throat, or diseases of the nervous system, or even pathology? Many a man who engages on his Ph.D. work, choosing anatomy, histology, bacteriology, embryology or physiology as his major, does so with the flimsiest sort of a rudimentary knowledge of any of these branches. To what extent has he studied these? Practically none. They were only in reality touched on in his academic school. Yet, the thing which gives him access to the attainment of the Ph.D. is his bachelor degree in arts or sciences; whereas the physician, if he does not hold a B.A. or a B.S., in spite of his superior knowledge and training in these branches, is barred from working toward that degree. If this is the case with these fundamental subjects,, then what can be expected with medicine itself, with the higher specialties which seem to command no recognition in a graduate department's curriculum?

That leads to the question, "Is it justifiable that the possession of an academic degree be absolutely necessary before a man may engage on the work for his Ph.D.?" Why, no. It is far better that he hold one; but it is wrong to make it absolute. If a man has the ability and ambition to strive for something higher and is heart and soul a student; or if he possess an aptitude for original research, which many a Ph.D. does not, then by no means should the lack of an academic degree keep him from his Ph.D. The degree of Doctor of Medicine no longer represents a mere profession from the business point of view. It represents a purely scientific pursuit as well, to do justice to the mass of practitioners who are striving their utmost for the advancement of science, and to the hundreds of Doctors of Medicine who give up their whole life to research. The present status of medicine in its relation to the advanced degree makes it urgent for the benefit of mankind that certain reforms or rather improvements take place very shortly. The change in entrance requirements to medical colleges taking place throughout the country makes the future recognition of the medical specialties, on a higher plane, more hopeful.

PHILIP FRANK, M.D.

Hemiplegia as a Complication in Typhoid Fever.

PITTSBURG, PA., Aug. 17, 1907.

To the Editor:—On two or more occasions I examined the literature to ascertain the frequency of hemiplegia as a complication of typhoid fever, and I was able to find very few references to it. Some text-books failed to mention the subject, and in none can one find it adequately treated. The accounts by Osler and Nothnagel were the fullest found. Therefore, the article on this subject by Dr. Frank Smithies, Ann Arbor, in THE JOURNAL, August 3, impresses me as a very valuable one. After considerable search through the literature, Dr. Smithies was able to collect forty-three cases. In his text-book Dr. Osler refers to Hawkins' collection of seventeen cases as the largest number with which he is familiar. The value of Dr. Smithies' paper thus becomes apparent.

The writings of Nothnagel, Osler and Hawkins, and this recent paper by Smithies indicate that hemiplegia is a very rare complication in typhoid fever. But I am inclined to believe, that, while this is true, the complication is less rare than we had formerly supposed; for I have myself seen three well-marked cases, two of which I have reported. One of these (*Medical Record*, Dec. 19, 1903) is included in Dr. Smithies' table; the other (THE JOURNAL A. M. A., May 27, 1905) is not. The third case I have never reported.

The complication deserves more study; and it is to be hoped that physicians will place on record such cases as may come under their observation, so that a more adequate idea may be obtained as to the genesis, character and frequency of this complication. THEODORE DILLER.

Taxing Private Hospitals.

CLEVELAND, OHIO, Aug. 15, 1907.

To the Editor:—In THE JOURNAL, July 27, 1907, the matter of taxing private charitable institutions is discussed. The view there taken is a mistaken one. Public support given private institutions, no matter for what purpose organized, whether religious, charitable or otherwise, is unsafe, as it tends to foster the unjust taxation systems under which we labor. Exactly as I am glad to see half rates withdrawn from ministers of the gospel, so I would be happy to find all land or monopoly values (they amount in last essence to the same thing) taxed on their actual social value and that regardless of what use put to (except in the case of state institutions, where the reason for not taxing is self-evident, clear cut and incapable of misapplication). Human nature being such that men will support the system which is easy on them, i. e., which gives them an advantage, real or imaginary, over their fellows, irrespective of the justice of that system, I would rather not see the situation further muddled by more institutions on the free list. Let there be economic justice, and charity (such as we have now) will become a nightmare of the past.

J. E. TUCKERMAN.

Probilin.

PHILADELPHIA, Aug. 24, 1907.

To the Editor:—The report on Probilin in THE JOURNAL, August 24, explains my experience with the formula suggested by Dr. R. W. Wilcox in his article on "The Medical Treatment of Gallstone Disease" (THE JOURNAL A. M. A., Aug. 4, 1906, page 347). Being desirous of carrying out the treatment suggested by Dr. Wilcox, I prescribed the formula of phenolphthalein with acid sodium oleate and salicylic acid. The pharmacist to whom the prescription was submitted informed me that it could not be compounded as written, but that he could dispense the materials massed separately in a capsule. Subsequently the same pharmacist suggested the use of sodium salicylate in place of the salicylic acid, the following modified formula being prescribed:

Sodium oleate	0.10
Sodium salicylate	0.10
Phenolphthalein	0.05
Menthol	0.015

Mix and dispense in 1 capsule.

The sodium oleate was prepared by mixing the proper proportion of sodium hydrate and oleic acid.

While my experience with the above formula has been limited to four cases, the results obtained seemed to be due to free catharsis resulting in a lessening of the jaundice and the presence of bile in the stools. In no case were stones recovered. Two capsules daily were found to produce active catharsis and dosage was limited to that number.

HENRY F. PAGE.

Organization.—The spirit of the present organization of the medical profession is unique. It is not the labor union spirit of merely personal and material benefit; it is spirit of personal uplifting, of personal education, of personal improvement in all those things which go to make a man a better physician and a better guardian of the sick in his charge.—Editorial in *California State Journal of Medicine*.

Miscellany

Serum Treatment of Plague.—Experience with the serum treatment of plague illustrates clearly the difficulties under which the experimenter labors in producing a curative serum for a bacterial infection of the blood like the plague. The natural process of cure for plague appears to be the destruction of the bacilli which have entered the blood, while the toxins which they produce are destroyed or antidoted by the natural powers of the system. No great amount of antitoxin appears to be formed in the organism which is able by its natural powers to cope with the toxemia only to a limited extent. This explains in a manner the extreme fatality of the plague. The destruction of the plague bacilli in the blood sets free a large amount of toxin which overwhelms the system so that it can not by its unaided powers antidote or eliminate it and a condition known as plague marasmus results. This condition is graphically described by Choksy in his "Report on the Treatment of Plague with Yersin-Roux Serum at the Maratha Hospital During 1905." The plague serums so far produced are bacteriolytic serums with little antitoxic power. They hasten the destruction of the plague bacilli, but leave the system to cope with the toxemia unaided. If administered before the bacilli have multiplied extensively in the blood, they cut short the disease, but if administered at a later period they may intensify the toxemia by increasing the bacteriolysis and really aggravate the condition. Hence the administration of the serum in hospital practice, where a considerable number of cases are admitted somewhat late in the disease, shows but little advantage over the cases treated without the serum; indeed, a larger proportion of cases exhibiting acute marasmus with marked toxemia are observed under the serum treatment than without it. But if the hospital cases are analyzed according to the day of the disease when the treatment was applied a considerable improvement under serum treatment may be demonstrated. Choksy finds that by summing up three series totaling 500 cases there was a general mortality of 53.6 per cent., while the percentage of mortality among those inoculated on the first day, numbering 89 cases, was only 38.2. The mortality increases in a regular ratio (with the exception of a slight drop on the fourth day) to 75 per cent. of those inoculated on the seventh day. The results from serum treatment are better in private practice largely because of the fact that such patients apply for treatment earlier and have better care. The serum treatment not only secures somewhat better results in general, but it secures an earlier convalescence, marked by fewer complications than occur in cases that have not had serum treatment. Choksy instituted a comparison of the two methods of treatment under circumstances well calculated to give a fair representation of the value of each. Of 148 cases, 46 were rejected as unfit for serum treatment, and of the remainder each alternate patient received serum treatment, the others serving as controls. Of the 51 in the control group, 42 died and 9 recovered, while of those treated by serum 37 died and 14 recovered, the mortality being 82.3 per cent. and 72.5 per cent. respectively. On the whole, therefore, there can be no doubt that there was distinct gain under the serum treatment, and that more lives were saved than under the ordinary treatment. The results leave much to be desired, however. This result, it must be remembered, is obtained in a disease that carries away about 84 people, on an average, out of every 100 attacked. Choksy is inclined to believe that, for the present at least, the limit of success is reached. He suggests that the results might be better if the serum were administered intravenously. If a serum could be discovered combining antitoxic and bactericidal properties, more lives could doubtless be saved. Under the present circumstances, a grave responsibility would seem to rest on those in charge of plague hospitals, if they withhold the serum even for a few hours.

Efficient Treatment of Ivy Poisoning.—The extremely poisonous character of poison ivy or sumach, the especial susceptibility of some individuals, and the fact that cases of poisoning occur in which there is no evidence of positive contact with the plant, leading many to think that the poisonous constitu-

ent is volatile, lend a peculiar interest to attempts to determine the composition of the plant and the source of its poisonous properties. Previous researches on this plant have been more or less unsatisfactory, but some late investigations by S. F. Acree and W. A. Syme (*Journal of Biological Chemistry*, March, 1907), seem to have been more successful in advancing our knowledge of this plant. The authors found that the plant contained a poisonous tar, gum or wax, which appeared to be the active ingredient in producing the phenomena of poisoning. This substance seemed to be non-volatile, as no poisonous substance was carried over when it was warmed to 55 C. (131 F.) with acetic acid or with alcohol. The poisonous tar or wax was decomposed by acids and yielded gallic acid, fisetin and rhamnose, showing the probable source of these compounds in the plant, and indicating that the poison is a complex substance of a glucoside nature. Perhaps the most important outcome of the investigation is the discovery of a rational remedy for the effects of the poison. The poison was found to be easily oxidized by potassium permanganate, and it occurred to Dr. Syme that this should be a good antidote for its effects. The successful use of permanganate in rhus poisoning was reported by Maisch, 1866 (*Am. Jour. Med. Sci.*, lii, page 288), but it never came into general use, probably on account of its staining the skin and clothing. Its use for this purpose is not now mentioned in most works on dermatology or pharmacology. Dr. Syme found that, when applied so as to reach the seat of the poison in the vesicles, it acted as an antidote, and what appeared to be a severe case of poisoning was cured very quickly. The solution was kept as hot as could be borne for about half an hour. The use of hot water not only reduces the swelling, but also helps to destroy the poison. The action of the permanganate is also more rapid at high temperatures. The concentration of the solution used is varied according to the location and condition of the eruption. Where the skin was thin or already broken, dilute solutions (1 per cent.) were used. It is important that the remedy should be well rubbed into the skin. In one case the eruption occurred in the palm of the hand, where the skin was so thick that it was necessary to open it before the remedy could reach the poison. The difficulty of getting the remedy in contact with the poison in the skin is the reason why the eruption is so hard to cure. Other remedies which have been used may owe their utility to the chemical characters of the poison. Lead acetate has been used to a large extent and depends for its success on its power of precipitating an insoluble lead compound of the poison. This compound is not, however, completely insoluble and eventually the poison becomes freed from the lead and resumes its irritating action. Alcoholic solutions should not be used, because the alcohol dissolves the poison, and on evaporation, leaves it spread over a larger surface like a varnish. The stain on the skin produced by potassium permanganate can be removed by vigorous scrubbing with soap or by a warm solution of oxalic acid, but the latter should not be used by persons not familiar with its action.

Etiology of Dengue Fever.—Ashburn and Craig record the results of their investigations regarding the etiology of dengue fever in the *Philippine Journal of Science*, May, 1907. Over 600 cases of dengue were treated in the general wards of the hospital at Fort William McKinley without a single case originating among the other patients in the wards. Of the men on duty belonging to the hospital corps only four contracted the disease three of these being nurses on night duty in the wards and the other a cook having no contact with the dengue patients. The only precaution taken to prevent contagion was the rigid use of mosquito nets at night. The dengue and other patients ate together and were closely associated throughout the day. The only men unprotected by the mosquito nets at night—the three night nurses—contracted the disease. All the experiments with fomites were negative. Healthy men lived in mosquito-proof tents with dengue patients sleeping in the same beds, putting on the underclothes and pajamas of the patients and eating from the same table. None of these men developed the disease. They conclude from their experiments that: 1, No organism can be demonstrated in either fresh or stained specimens of dengue blood with the microscope; 2, the red blood count in dengue is normal; 3, no characteristic morphologic changes in the red or white blood corpuscles occur in this disease; 4, dengue is characterized by a well-marked leucopenia, the polymorphonuclear leucocytes being decreased, as a rule, while there is marked increase in the small lymphocytes; 5, unfiltered dengue blood inoculated intravenously into healthy men is followed by a typical attack of the disease; this also follows inoculation of filtered blood; 6, the cause of the disease is, therefore, probably ultramicroscopic; 7, dengue can be transmitted by the mosquito, *Culex fatigans* (Wied.), and this probably is the commonest manner of transmission; 8, no organism of etiologic significance occurred in bouillon or citrated blood cultures; 9, in experimental dengue, the period of incubation averages three days and fourteen hours; 10, certain individuals are absolutely immune to dengue; 11, dengue is not a contagious disease, but is infectious in the same manner as is yellow fever and malaria. The treatment, as indicated by their experiments, is chiefly prophylactic. Protection from mosquitoes is probably all that is necessary. When the disease exists, cold bathing, sponging and the use of ice caps are advisable to keep the temperature within bounds; opium and the bromids, they think, are probably safer routine measures than the coal-tar products, where there are much pain and nervous manifestation.

Prison Sentence for Eddyite.—The duty of the parent or guardian to furnish medical attendance for a sick child is affirmed in the decision of Justice McKean in the case of the state against Clarence W. Byrne, an Eddyite, of New York City, who allowed his 6-year-old daughter to die of bronchial pneumonia without calling a physician. As noted in our news columns August 10, the sentence was thirty days in the city prison. The question whether or not religious belief constitutes a valid excuse had already been decided by the Court of Appeals in the People vs. Pierson. There a child died of bronchial pneumonia without having medical attendance, and the father by adoption was convicted of violation of the statute. The conviction was sustained on the distinct ground that failure to procure medical attendance through disbelief therein and faith in the curative methods by prayer did not constitute a "lawful excuse." Justice McKean says: "An individual of some other cult, with equal plausibility, could plead disbelief in educational methods as an excuse for not sending children to school; could withhold food, clothing and shelter, leaving each, as part of his religion, to be furnished through the same or similar agency." Motion for a new trial was made on the ground that a regularly licensed physician would testify that, in cases of pulmonary pneumonia in children of 6 years of age, the room should be kept at a temperature of from 70 to 75 degrees, a trained nurse should be in attendance, and, in many cases, the use of drugs is not needed. The justice says: "The affidavit of this physician is general. It does not pretend to speak of the case of this defendant's daughter or to know anything of the symptoms manifested in her illness. He could not, therefore, schedule the case as being within his generalization. Medical attendance is needed, but this need not be constant. A doctor's skill and experience are believed to be sufficient to detect the cause of the trouble, and then to prescribe the proper remedies or the proper care to avert the disaster. A physician, authorized by the state to practice his profession, must be procured for children dangerously ill, and a parent who omits this imposed duty can find no legal excuse if the disease ends fatally, in the fact that his views differ from the legislative policy of the state."

Tuberculous Lymph Glands.—J. Eddy Blake, Brooklyn, in the *Long Island Medical Journal*, states that in a patient susceptible to tuberculosis and exposed to this disease it is just as illogical to suppose that removal of the affected glands in the neck will be followed by a cure and immunity to tuberculosis, as it is to suppose that tonics and massage will restore tuberculous glands to normal when they have undergone caseation, and abscesses have formed. Both may be possible, but neither need be expected.

Treatment of Urticaria.—N. E. Aronstam, in the *Medical Fortnightly*, states that calomel, sodium salicylate, and small doses of extract or tincture of belladonna will benefit the most intractable cases of urticaria, even after all other remedies, external and internal, have failed to effect a cure.

The Public Service

Army Changes.

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ending Aug. 24, 1907:

McCulloch, C. C., Jr., surgeon, relieved from temporary duty at Fort Meade, S. D., and will return to Ancon, Canal Zone, and resume his duties with the Isthmian Canal Commission.

Wadhams, S. H., asst.-surgeon, granted fifteen days' leave of absence.

Ives, F. J., surgeon, granted twenty-one days' leave of absence.

Hartsock, F. M., asst.-surgeon, granted thirty days' leave of absence.

Ashford, B. K., asst.-surgeon, left Washington Barracks, D. C., enroute to Camp Perry, Ohio, for duty.

Davis, W. R., asst. surgeon, advanced to the rank of captain from Aug. 8, 1907.

Huggins, J. B., asst.-surgeon, in addition to his other duties, will report for duty as medical attendant, Washington Barracks, D. C., during the absence of Capt. Bailey K. Ashford, asst.-surgeon, at Camp Perry, Ohio.

Bourke, James, asst.-surgeon, ordered to proceed to Camp Captain John Smith, Jamestown Exposition, Norfolk, Va., for temporary duty during the absence of Capt. P. L. Jones, asst.-surgeon, on whose return to Camp Captain John Smith, Lieutenant Bourke will resume his duties on the transport *Kilpatrick*.

Phillips, J. L., and McCulloch, C. C., Jr., surgeons, and Noble, R. E., asst.-surgeon, appointed members of a board to meet at Ancon, Canal Zone, Isthmus of Panama, Sept. 23, 1907, for the examination of such officers of the medical department as may be ordered before it to determine their fitness for promotion or advancement.

Murray, Alexander, asst.-surgeon, ordered to report in person to Major J. L. Phillips, surgeon, president, examining board at Ancon, Canal Zone, Isthmus of Panama, for examination to determine his fitness for advancement.

Fisher, H. C., surgeon, appointed a member of Army Retiring Board, to meet at Denver, vice First Lieutenant G. A. Scott, asst.-surgeon.

Darnall, C. R., asst.-surgeon, left Washington, D. C., on thirty days' leave of absence.

Snyder, C. R., asst.-surgeon, granted thirty days' leave of absence.

Brown, O. G., asst.-surgeon, left Fort Robinson, Neb., with troops on practice march.

MacDonald, C. E., cont.-surgeon, arrived at San Francisco, on leave of absence for one month from the Philippines Division.

McCown, T. B., cont.-surgeon, granted leave of absence for three months.

Tetrault, C. A., cont.-surgeon, ordered to Fort Baker, Cal., for temporary duty.

Gunckel, G. L., dental surgeon, ordered to visit professionally Fort Dade, Fla., Fort De Soto, Fla., Fort Screven, Ga., Fort Fremont, S. C., Fort Moultrie, S. C., and Fort Caswell, N. C.

Wing, F. F., dental surgeon, left San Francisco, August 15, on the transport *Buford* for Philippine service.

Whinnery, J. C., dental surgeon, left Fort Egbert, Alaska, for duty at Fort Gibon, Alaska.

Le Hardy, J. C., cont.-surgeon, ordered to proceed to Fort Lawton, Wash., for duty.

MacDonald, C. E., cont-surgeon, will accompany Ninth Infantry, to Fort Sam Houston, Texas, and report to the adjutant general of the army for further orders.

Parkman, W. E., cont.-surgeon, will accompany Troops I, K, L and M, Sixth Cavalry, to San Francisco, and then return to his proper station.

Voorhies, H. G., dental surgeon, returned to duty at Fort D. A. Russell, Wyoming, from leave of absence.

Chamberlain, G. E., cont.-surgeon, reported for duty at Fort Walla Walla, Wash.

Garcia, L. C., cont.-surgeon, will proceed from Fort Riley, Kans., to Fort Leavenworth, Kans., in time to report on Aug. 30, 1907, to the commanding officer for duty to accompany the Third Battalion of Engineers (less Co. K) by rail to Fort Riley, Kans.

Navy Changes.

Changes in the medical corps, U. S. Navy, for the week ending, Aug. 24, 1907:

Baker, M. W., P. A. surgeon, detached from the naval hospital, Boston, and ordered to the naval hospital, New Fort Lyon, Colo.

Taylor, E. C., P. A. surgeon, ordered to the naval hospital, New York, for treatment.

(Orders issued by the Commanding General, Army of Cuban Pacification, August 8.) Holloway, James H., P. A. surgeon, Camp Columbia, Cuba, will proceed to Palmira, Province of Santa Clara, Cuba, for duty, relieving William A. Angwin, asst.-surgeon.

Public Health and Marine-Hospital Service.

List of changes of stations and duties of commissioned and noncommissioned officers of the Public Health and Marine-Hospital Service for the seven days ended Aug. 21, 1907:

Wertenbaker, C. P., surgeon, directed to proceed to Cape Charles Quarantine Station for temporary duty; on completion of which to rejoin his station in Norfolk, Va.

Clark, T., P. A. surgeon, granted leave of absence for fourteen days, from Aug. 26, 1907.

King, W. W., P. A. surgeon, relieved from temporary duty at the Hygiic Laboratory and directed to proceed to San Francisco, reporting to the medical officer in command, Angel Island Quarantine Station, for duty and assignment to quarters.

Stansfield, H. A., P. A. surgeon, directed to proceed to San Francisco, reporting to the medical officer in command for special temporary duty.

Amesse, John W., P. A. surgeon, relieved from duty at Ellis Island, N. Y., and directed to proceed to Havana, Cuba, for duty in the office of the American Consul-General.

Collins, G. L., asst.-surgeon, granted leave of absence for one day, Aug. 17, 1907.

Krulish, Emil, asst.-surgeon, directed to proceed to Ellis Island, N. Y., reporting to the chief medical officer for duty.

Adamson, B. G., acting asst.-surgeon, granted ten days' extension annual leave on account of sickness, from July 28, 1907.

Bailey, C. W., acting asst.-surgeon, granted leave of absence for ten days, from Sept. 16, 1907.

Hicks, B. I., acting asst.-surgeon, leave of absence granted for twelve days, from Aug. 4, 1907, revoked.

Ransom, S. A., acting asst.-surgeon, transferred from Shanghai, China, to Kobe, Japan, for duty, vice J. P. Fowler, acting asst.-surgeon.

RESIGNATIONS.

Resignation of E. T. Olsen, asst.-surgeon, accepted, effective Oct. 12, 1907.

Turner, Linton, acting asst.-surgeon, resigned to take effect Aug. 15, 1907.

BOARDS CONVENED.

The board convened to meet at Chicago, July 25, 1907, for the purpose of examining an inspector of immigrants, amended: B. S. Warren, P. A. surgeon, to act in place of J. J. Gerkins, acting asst.-surgeon.

A board of officers was convened to meet at Galveston, Texas, for the purpose of recommending a site for a national quarantine station. Detail for the board: Capt. Percy W. Thompson, U. S. R. C. S., Surgeon J. H. White, P. H. and M.-H. S., and Capt. J. C. Oakes, Corps of Engineers, U. S. A. (by authority of Secretary of War).

Health Reports.

The following cases of smallpox, yellow fever, cholera, and plague have been reported to the Surgeon-General, Public Health and Marine-Hospital Service, during the week ended Aug. 23, 1907:

SMALLPOX—UNITED STATES.

California: Oakland, July 1-21, 1 case; San Francisco, Aug. 4-10, 1 case.
Indiana: General, June 1-30, 193 cases in 31 counties.
Iowa: Keokuk, July 1-31, 2 cases.
Louisiana: New Orleans, Aug. 4-10, 1 case; Shreveport, Aug. 7-14, 1 case.
Massachusetts: Boston, Aug. 12-17, 1 case.
Michigan: Detroit, Aug. 4-10, 2 cases.
New Jersey: Newark, Aug. 4-10, 2 cases; West Hoboken, Aug. 9-15, 2 cases.
New York: New York City, Aug. 4-10, 1 case.
Utah: Salt Lake, July 1-31, 5 cases.
Washington: Spokane, July 28-Aug. 3, 1 case; Tacoma, July 28-Aug. 3, 2 cases.

SMALLPOX—FOREIGN.

Austria: Galicia, June 23-July 13, 9 cases; Vienna, July 21-27, 1 case.
Brazil: Para, July 1-27, 9 cases, 2 deaths; Pernambuco, June 1-15, 77 deaths; June 16-30, 109 deaths; Rio de Janeiro, July 8-14, 4 cases, 3 deaths.
Egypt: Cairo, July 9-22, 1 case, 1 death.
Canada: Halifax, Aug. 4-10, 2 cases.
Chile: Iquique, July 18-24, present.
China: Shanghai, July 1-13, 6 foreign cases, 83 native cases.
Ecuador: Guayaquil, July 21-27, 1 death.
France: Paris, July 21-27, 11 cases, 4 deaths.
Great Britain: Sunderland, July 21-27, 1 case.
India: Bombay, July 11-16, 3 deaths; Calcutta, June 30-July 6, 9 deaths; Rangoon, June 30-July 6, 1 death.
Java: Batavia, June 16-July 6, 5 cases.
Madeira: Funchal, July 22-28, 45 cases, 3 deaths.
Manchuria: Dairy, July 7-13, 2 cases.
Mexico: Mexico City, July 14-20, 8 deaths; Monterey, Aug. 2-8, 1 death.
Portugal: Lisbon, July 21-27, 9 cases.
Russia: Batoum, June 24-30, 1 case; St. Petersburg, July 14-20, 2 cases; Warsaw, July 21-29, 2 deaths.
Siberia: Vladivostok, June 29-July 5, 1 case.
Spain: Malaga, June 1-30, 4 deaths; Valencia, June 22-28, 14 cases, 1 death.
Turkey: Constantinople, July 22-28, 1 death.

CHOLERA.

China: Tientsin, Aug. 15, epidemic.
Japan: Moji, Aug. 20, 26 cases.
India: Bombay, July 10-16, 1 death; Calcutta, June 30-July 6, 44 deaths; Cochin, June 28-July 5, 7 deaths; Kashmir, June 30-July 9, 42 cases, 26 deaths (subject to increase); Madras, July 6-12, 1 death.
Straits Settlements: Singapore, June 23-29, 1 death.

YELLOW FEVER.

Brazil: Manaos, June 30-July 6, 3 deaths; Para, July 21-27, 1 case, 1 death.
Cuba: Alacranes, Aug. 19, 1 case; Cienfuegos, Aug. 15-19, 8 cases, 1 death; Matanzas, Aug. 7-19, 2 cases, 2 deaths.
West Indies: Trinidad, Port of Spain, July 25-31, 6 cases, 2 deaths.

PLAGUE—UNITED STATES.

California: San Francisco, Aug. 12-14, 5 cases, 4 deaths.

PLAGUE—FOREIGN.

Africa: King William's Town, June 23-July 6, 2 cases.
Brazil: Rio de Janeiro, July 8-14, 2 cases; Pernambuco, June 1-30, 3 deaths.
China: Swatow, June 1-15, present.
Chile: Antofagasta, July 2-8, 3 cases; Pisagua, July 18-24, present.
French Indo China: Saigon, June 28-July 4, 15 cases, 15 deaths.
Japan: Formosa, June 30-July 13, 116 cases, 98 deaths.
Peru: Callao, July 2-17, 3 cases, 1 death; Lima, July 2-10, 1 case, 1 death; Mollendo, July 11-17, 1 death; Paita, July 12-17, 1 case, 1 death; Trujillo, July 2-4, 11 cases, 4 deaths.
Egypt: Alexandria, July 19-Aug. 1, 13 cases, 6 deaths; Port Said, July 19-Aug. 1, 2 cases, 2 deaths.
Provinces: Behera, July 19-Aug. 1, 6 cases, 8 deaths; Beni Souef, July 19-Aug. 1, 4 cases, 1 death; Kena, July 19-Aug. 1, 7 cases, 7 deaths; Minieh, July 19-Aug. 1, 1 case, 1 death.

Medical Economics

THIS DEPARTMENT EMBODIES THE SUBJECTS OF ORGANIZATION, CONTRACT PRACTICE, INSURANCE FEES, MEDICAL LEGISLATION, ETC.

Dispensary Abuse.

The results of the investigation made by a committee, appointed by the president of the Medical and Chirurgical Faculty of Maryland, of the dispensary evil is interestingly summarized by Dr. W. S. Thayer in the *Maryland Medical Journal* for July 1907.

A letter was sent out to a number of physicians in the city of Baltimore and their answers to it show a wide divergence of opinion on the subject. As against the commonly accepted opinion that many people able to pay for medical services seek free service at the dispensary, one physician of large experience says: "Doctors seem to me to be eminently unable to judge of the financial standing of people." He calls attention to the fact that owing to the common habit in this country of living up to the limit of their means there are many people who, owing to temporary misfortune or loss of work, are really in a condition of genuine want. It is common for women when visiting a dispensary to put on the best clothes they have and thus give rise to an entirely erroneous impression as to their financial status. He further states that many physicians have confessed to him that the dispensaries are a "relief" to them, as the patients "when unable to pay go to dispensaries and when in funds send for their attending physician again." He concludes that "when the average American has money he spends it and becomes a pauper under any misfortune that is lasting."

Still another physician, a young man depending entirely on his practice for his support and who has had considerable experience in work among the poor, thinks the dispensary "evil" a much exaggerated one. While he admits that there are doubtless individuals who abuse the charity he is inclined to include the doctor with the patient in such abuse. He asserts that the physician often uses the dispensary to obtain a "cheap consultation or to allay the fears of a dissatisfied chronic or neurasthenic and thus prevent his drifting away."

The advertisement which the senior members of some hospital staffs get by their names being printed on the dispensary cards which the patients carry to their homes, is, in the opinion of another physician, a serious abuse. Still others maintain that the practice which obtains in some dispensaries of accepting fees from individuals who can pay or who offer to pay is a vicious one. Dispensaries, they claim, should be charitable institutions, pure and simple. The dispensary which "attempts to partially defray expenses by charging a fee" as well as that "which is run for commercial purposes or as a feeder to the practice of attending physicians" is unworthy of existence.

Still another physician was sure that the only abuse that exists is to charge persons for the prescription. This payment of a nominal fee has "prostituted more 'paying' patients into 'beats' than anything" he has encountered in twenty-five years' practice. People who would indignantly deny being objects of charity go to such dispensaries and sop their consciences by paying this ten-cent fee.

As Dr. Thayer remarks, "the regulation of dispensary abuses is a very wide problem, one which is obviously not to be settled by any simple measure."

The article abstracted above is interesting as an expression of individual opinion on a matter of great importance to both the public and the medical profession. As Dr. Thayer has pointed out, there is a wide difference of opinion on the subject of the abuse of dispensary treatment. It is safe to assume that much of this diversity of opinion is due to the lack of accurate, concise data on the subject. It is evident that some of the physicians whose opinions were given had very little realization of the importance of the subject and had not considered it carefully. While interesting as a collection of individual opinions, it would seem to be more to the point if an exact tabulation of Baltimore dispensaries had been made, classifying them according to their connection with teaching institutions, character of patients treated, etc., as well as the number of patients treated annually, the average number of times each patient was treated and the amount of care exercised by the physicians to avoid treating those able to pay. We feel safe in saying, from the results obtained by the committee on the abuse of medical charities in Chicago and from investigations in other large cities, that a careful statistical study of the dispensaries of Baltimore will show that a surprisingly large percentage of the population of that city are the recipients of gratuitous medical services and that the percentage of persons receiving medical charity far outnumbers the percentage of persons receiving any other form of charitable relief. This is an evil peculiar to large cities and one which should be most carefully and exhaustively studied before any generalizations on the subject are attempted.

Organization Notes.

The Cumberland Valley Medical Association, composed of the members of the societies of the counties of Washington, Maryland, and Franklin and Cumberland, Pennsylvania, announces its fifth annual meeting, to be held at Blue Mountain House, Maryland, September 5.

The Bucks County (Pa.) Medical Society held its fourth annual assembly at Menlo Park, August 14. The object of the meeting, as announced in the circular by the president, was "to promote a closer bond of unity between physicians through social intercourse; to give our wives an opportunity to enjoy themselves with us; to bring the press, law, pharmacy, theology and medicine into closer fellowship, and to teach each profession that a closer relationship will be mutually advantageous. The after-dinner program for the meeting included addresses on "The Druggist and the Doctor," by the vice-president of the Bucks County Druggists' Association; "The Press and the Doctor," by the editor of one of the local newspapers, and "The Lawyer and the Doctor," by a prominent Bucks County attorney.

The Rhode Island State Board of Health has issued a special bulletin showing the sanitary legislation enacted in the various states during the years 1905 and 1906, including new acts and amendments to existing acts regarding the practice of medicine, state boards of health, pure food and drug regulation and other hygienic and sanitary questions. These two pamphlets, compiled by Dr. Charles V. Chapin for the state board, will be of great interest and value to anyone working along these lines.

Society Proceedings

COMING MEETINGS.

Medical Society of the Missouri Valley, Council Bluffs, Iowa, Sept. 5.
Washington State Medical Association, Seattle, September 10-12.
Colorado State Medical Society, Glenwood Springs, Sept. 17-19.
Amer. Assn. of Obstetricians and Gynecologists, Detroit, Sept. 17-19.
American Electro-Therapeutic Assn., Boston, Sept. 17-19.
Medical Society of the State of Pennsylvania, Reading, Sept. 23-26.
Southern Medical Association, Birmingham, Ala., Sept. 24-26.
Amer. Acad. of Ophthal. and Oto-Laryng., Louisville, Sept. 26-28.
American Public Health Assn., Atlantic City, Sept. 30-Oct. 4.
Medical Assn. of District of Columbia, Washington, Oct. 1.
American Roentgen Ray Society, Cincinnati, Oct. 2-4.
Idaho State Medical Society, Boise, Oct. 3-4.
Delaware State Medical Society, Wilmington, Oct. 8.
Nevada State Medical Society, Reno, Oct. 8-9.
Mississippi Valley Medical Association, Columbus, O., Oct. 8-10.
Vermont State Medical Society, St. Johnsbury, Oct. 10-11.

MINNESOTA STATE MEDICAL ASSOCIATION.

Annual Meeting, held in Duluth, Aug. 12-13, 1907.

The President, DR. H. A. TOMLINSON, St. Peter, in the Chair.

About 200 members registered. The first meeting of the House of Delegates was on Monday afternoon. Three subsequent sessions were held. A committee was appointed to consider medical defense and to report at the next meeting. A committee was also appointed to draft a new medical practice act for presentation to the next legislature. The present contract with the Lancet Publishing Company of Minneapolis,

for the publication of the transactions of the society, was renewed for three years from Dec. 31, 1907.

St. Paul was selected as the next meeting place, in October, 1908, the exact time to be determined by the council.

Election of Officers.

The following officers were elected: President, Dr. W. H. Magie, Duluth; secretary, Dr. Thomas McDavitt, St. Paul; treasurer, Dr. R. J. Hill, Minneapolis; members of the council (for three years), third district, Dr. William Davis, St. Paul; second district, Dr. J. J. Millspaugh, Little Falls; fifth district, Dr. H. M. Workman, Tracy.

WISCONSIN STATE MEDICAL SOCIETY.

Sixty-first Annual Meeting, held at Superior, Aug. 21-23, 1907.

The President, Dr. L. H. Pelton, Waupaca, in the Chair.

The meeting was largely attended and successful. The membership of the society is 1,503, as against 1,434 last year, out of a possible membership of 2,000. The physicians of Superior did everything possible to entertain the visitors, and the attendance reached 125.

President L. H. Pelton, Waupaca, in his annual address sketched the progress of medicine and surgery to the present time, and said that such progress had resulted in increased longevity. Their old society was a good one, but increase in numbers made reorganization and systematic alliance with the American Medical Association absolutely necessary. National legislation should be secured by strict cooperation. County and district societies should be encouraged, and the former should meet at least quarterly. There is no profession where constant reading, observation and comparison are so necessary; none that has a greater range of usefulness; none where unity and fraternalism, wherein lies the strength of all organizations, is more to be desired than in the medical profession.

Pneumonia.

Dr. L. A. Potter, Superior, said that this subject should be discussed each year until better treatment is secured and methods of prevention better understood. The virulence of the pneumococci are greatly increased when passed through a susceptible animal. Sudden chilling is a contributing cause; alcoholic drinks and narcotic drugs favor the disease; it is probable that the amount of nostrums which contain largely alcohol and narcotics, consumed in the past, has played an important part in the causation of pneumonia. The means of prevention lie in general and personal hygiene and disinfection. Health departments should have the same authority in pneumonia as in other contagious and preventable diseases. There is no known specific for pneumonia, though one may be developed from the opsonic theory. No advantage has been secured in the serum treatment. Open-air treatment is advantageous and the colder the weather the better the results. The treatment, however, should be individualized.

Mechanism of Pneumococcal Infection.

Dr. H. E. Wolf, La Crosse, said that it is important to study carefully the organisms from the blood of pneumonia patients and of the mechanism by means of which the body protects itself against and combats infection. Phagocytosis is dependent on the presence in the blood of opsonins. The opsonic index shows the protective powers of the blood. The opsonins can be increased by the injection of the proper bacterial vaccines, and in many cases this increase of opsonins is associated with favorable influence on the infection, thus indicating a new line of treatment and pointing toward the ultimate discovery of a specific for pneumonia. The essential process in lobar pneumonia is pneumococcemia. Blood cultures in fatal cases are always positive and more virulent than those taken from non-fatal cases; but virulence (that is, the property by means of which the organism resists phagocytosis) has no influence on the extent of pulmonary localization nor on leucocytosis; the extent of pulmonary involvement has no influence on prognosis; leucocytosis is a favorable symptom, yet in the absence of sufficient opsonins is useless. The opsonins in pneumonia are decreased and in fatal cases remain below normal, while in recovery they rise above normal just before the crisis. The typical pneumococcic opsonic curve can be produced by the injection of dead virulent pneumococci.

Discussion on Pneumonia.

Dr. E. W. Quick, Appleton, said that pneumonia is a general disease whose prognosis depends not on the amount of lung involvement, but on the virulence of the organism. The question of opsonins promises important ultimate results in treatment. Dr. Rosenau has shown that the blood in pneumonia patients exhibits a higher percentage of acid than in health, and therefore the alkaline treatment seems to be established on a reasonable basis.

Dr. L. F. Jermain, Milwaukee, said that, since it is now established that pneumonia is an acute infectious process, and that the changes in the lungs are merely local manifestations of general infection, it should not be treated as a local disease, but along the lines of other acute infectious diseases, and no consideration paid to merely local conditions. Pneumonia should be regulated by local health authorities the same as other infectious diseases are. Our hope in the future treatment of pneumonia lies along the lines of the opsonic theory.

Dr. E. J. Brown, Decatur, Ill., said that the opsonic theory explains the success of the treatment of passive hyperemia in joint disease, through increasing locally the opsonic index, and suggests new lines of treatment in various diseases. At present, however, owing to the complexity of technic, the general practitioner can not do opsonic work.

Dr. Potter emphasized the point that the cause of pneumonia is bacterial infection, and that it should therefore be treated as a general and not as a local infection.

Dr. Wolf referred to the inefficiency of the drug treatment and the great injury it does in destroying the only safeguard that the body has in combating the infection, the opsonins.

Intussusception.

Dr. C. L. Combs, Oshkosh, said that this condition is rare in adults and is difficult of diagnosis; the chances of recovery are small, especially in gangrenous cases. He reported a case, in an adult female of four days' duration, in which resection was performed and, although gangrene had set in before operative interference was determined on, yet recovery resulted.

Venereal Diseases and Marriage.

Dr. D. J. Hayes, Milwaukee, said that a syphilitic subject has no right to marry unless his disease dates back four or five years and all this time has been devoted to a careful and scientific treatment of the disease. Urethral folliculitis is one of the most insidious and important conditions that occur in gonorrhea. About 40 per cent. of all gonorrheas affect the prostate. The physician should be as cautious in assuming the responsibility of advising those who have suffered from gonorrhea, in the matter of matrimony, as he should be in advising syphilitics under similar circumstances, and the rule laid down by Ulzmann should be followed, viz., that there must be absence of gonococci, absence of pus corpuscles and absence of periurethral complications before marriage is permissible.

Discussion.

Dr. Herman Reineking, Milwaukee, said that persons afflicted with venereal diseases should be warned not to marry until cured. Many cases of puerperal sepsis are due to gonorrheal affection.

Dr. Byron M. Caples, Waukesha, said that he believes that a man who has once had syphilis should never be permitted to marry, and indeed should be sterilized.

Symposium on Headache.

Dr. L. F. Jermain, Milwaukee, discussed the classification, cause and treatment of headache, including headache due to renal insufficiency, defective metabolism, toxins, drugs, migraine, meningitis, cerebral syphilis, and arteriosclerosis. Successful treatment depends on the correct diagnosis of the underlying causes of the headache.

Dr. B. M. Caples discussed the subject from the standpoint of the neurologist, confining himself to headaches resulting

from neurasthenia, hysteria, epilepsy and various forms of neuritis.

DR. C. D. CONKEY, Superior, read a paper on headache from the point of view of the nose and throat specialist. Malformations and inflammations in the nose cause headaches. He described a case in which headache was cured by removing a large club-shaped projection from the middle turbinate. Where respiration is obstructed headache may result, especially in the case of adenoid vegetations in the vault of the pharynx.

DR. HENRY B. HITZ, Milwaukee, discussed headache of otic origin. He described the various forms of otic headache and concluded by saying that headache from disease in the region under discussion has not been of great importance except as a means of attracting attention to the affected region.

DISCUSSION.

DR. L. F. BENNETT, Beloit, said that headache is usually simply a symptom, and the real cause or combination of causes should be determined, which is often very difficult.

DR. J. M. DODD, Ashland, said that headache is simply a symptom of some disturbance occurring perhaps in a remote part of the body.

Simple Ulceration of the Bladder in the Female.

A paper by DR. M. W. DYORAK, La Crosse, was read by Dr. Edward Evans. The existence of ulcer of the bladder is generally believed to be of rare occurrence, simply because of failure to make careful examination. The cystoscope, which is the only means of making diagnosis, should be used in all cases in which a vesical affection is more than transient. Curettage and topical treatment should be employed in these cases.

Heart Disease.

The annual address in medicine was delivered by Dr. George Dock, professor of medicine in the University of Michigan, on "Recent Advances in the Pathology and Therapeutics of Heart Disease." He said that we are entering on a new era in the investigation of diseases of the heart. All morbid phenomena, functional as well as structural, are being thoroughly investigated. He sketched the history of the study of heart disease. We have learned that the heart is more than a crude propulsive organ. It narrows orifices, fixes valves, directs currents, and has a marvelous range of adaptability. Valvular lesions are rapidly becoming better understood; we are starting on a new road in the study of muscular disease and beginning to understand the reason of disturbances of rhythm. The history of the fibers known as the Bundle of His is remarkable, and led to the development of the myogenic theory of the heart's action. Professor Erlanger has made brilliant investigation into the function of this bundle. The essential functions of heart muscle tissue are automatic stimulus-production, conductivity, irritability and contractility. With our present light we can study cardiac arrhythmias to much better advantage than we could with the physiology of a few years ago. Arrhythmia may be classified into respiratory, extrasystolic, fibrillary contraction, heart block, hemisystole and alternating systole. With reference to prognosis a good deal has been said and more can be surmised. In some cases the heart is the primary seat of disease and so causes the functional anomaly. This is true generally in extrasystole, irregular pulse, ventricular asystole, heart block and alternating pulse. In some of the other irregularities the cardiac abnormality is the result of some other, perhaps distant, lesion or functional disturbance. In some cases the part of the heart affected can be stated, while in others it can not. The subject is new. The special causes of the anomaly are often impossible of demonstration. The study of cardiac arrhythmias will rarely give us in a short time a diagnosis we could not have made without such study; but it will add much to our knowledge of disease phenomena and to the accuracy of our investigation of the individuals we have to treat in practice. Individualization is necessary in treatment. Preventive treatment is the first need. In the treatment of irregularities the main thing is to abstain from cardiac remedies until complete diagnosis has been made. In some cases, in fact, the most important thing is to stop medication, as in patients with compensated valvular lesion who have digitalis irregularities. In other cases indirect treatment is necessary, as in gastric or intestinal reflex arrhythmias, arterioclerosis and neuroses of a general kind.

Nerve Lesions Complicating Simple Fractures of Long Bones and Their Treatment.

DR. KARL DOEGE, Marshfield, said that these complications may readily occur, but are often overlooked. The nerve tissue is peculiarly sensitive to even a moderate degree of pressure. Traumatism to nerves is immediate or remote. Immediate traumata are contusions or divisions of nerves; remote traumata are due to scar tissue formation. Differential diagnosis must be made between contusions and divisions of nerves. Contusions should be treated by expectancy, massage, galvanism, etc., and divisions by suture and end-to-end approximation.

DISCUSSION.

DR. HERMAN REINEKING, Milwaukee, recalled only one such case in his experience.

DR. E. S. HAYES, Eau Claire, called attention to the fact that a pressure apparently insignificant may cause nerve paralysis lasting for a considerable time.

DR. G. PERRY, Amery, said that an extensive loss of nerve function might occur without permanent injury to the nerve.

Management of Labor.

DR. F. W. EPLEY, New Richmond, said that labor is a natural physiologic process which often should not be interfered with. If labor progresses till the head is resting against the perineum, terminate the case at the end of a couple of hours by the application of simple forceps. Do not use the lumbering creations with high-sounding names which are now on the market. Most of them are unnecessary and their use pernicious. Employ chloroform only during the last few moments of extreme suffering. Toughen the nipples by having them thoroughly massaged some time before labor.

DISCUSSION.

DR. J. P. COX, Superior, recommended having bedding and cloths made aseptic and using the Kelly pad. The husband is more trouble than he is of aid and should be kept out of the way entirely. Put a brace at the head of the bed for the patient to grasp. Repair even the slightest lacerations.

DR. HUGO PHILLER, Waukesha, said that the use of chloroform is of prime importance and is without bad results. He prefers the Vienna mixture of 11 parts of ether, 12 parts of alcohol, and 77 parts of chloroform, by weight.

DR. JULIUS NOER, Stoughton, declared the use of chloroform dangerous; it should be watched as carefully in labor as elsewhere; its use is necessary in only a few cases.

DR. A. D. GIBSON, Park Falls, recommended that lacerations should not be repaired unless they involve the muscular tissue. He uses chloroform as a rule in labor.

Gallstones.

DR. F. GREGORY CONNELL, Oshkosh, read a paper on the removal of gallstones from the second and third portions of the common bile-duct. A comparison of the retroduodenal with the transduodenal approach leads to the conclusion that the latter is generally the better method. The essayist presented a report of a successful case of transduodenal choledochotomy, together with an analysis of collected cases.

DISCUSSION.

DR. EDWARD EVANS, La Crosse, called attention to the fact that the rarity of the condition is due to the anatomic formation of the duct.

DR. CONNELL replied to a question that the time required for the formation of gallstones is in doubt, but that Dr. Mayo thinks that they are formed in a very short time when proper conditions are present.

Early Diagnosis of Gastric Carcinoma.

DR. WILLIAM ACKERMANN, Milwaukee, said that early diagnosis is of prime importance and can be based on no one symptom, but must be founded on the symptom-complex, including loss of appetite, nausea, eructation of gas, epigastric distress,

anemia, emaciation, cachexia, age, heredity, previously existing gastric ulcer, examination of stomach contents, lactic acid in place of HCl, the Oppler-Boas bacilli in place of sarcinæ, and constant finding of occult blood. Pyloric and cardiac carcinoma may frequently be diagnosed early because of the presence of obstruction, but this is not the case with interostial carcinoma.

DISCUSSION.

DR. F. GREGORY CONNELL, Oshkosh, remarked that one-third of all carcinomata occur in the stomach, and 60 per cent. of carcinomata of the stomach show a previous history of gastric ulcer. Complete removal of the neoplasm is the only hope for a cure. After arriving at a suspicion of gastric cancer exploratory laparotomy should be performed.

Prevalent Ocular Diseases.

DR. N. M. BLACK, Milwaukee, gave, for the benefit of the general practitioner, a description of the commonly occurring diseases of the eye, including blepharitis, hordeolum, abscess, chalazion, corneal ulceration, dacryocystitis, blennorrhea, conjunctivitis, ophthalmia, neonatorum, trachoma, scleritis, keratitis, iritis, cataract, glaucoma and squint, together with the approved modes of treatment employed.

DISCUSSION.

DR. C. D. CONKEY, Superior, considers blepharitis a most common, and one of the most obstinate, forms of eye diseases, especialy when ulcerative. Lachrymal disease following hypertrophic catarrh is also obstinate. There is no loss of sight in ophthalmia neonatorum except through failure of technic, and especially through lack of cleanliness in the eye. Nitrate of silver is the ideal treatment. A strong objection to argyrol is that it decomposes rapidly and thus deteriorates. The destruction of the eye in adults from gonorrheal ophthalmia is something frightful. Phlyctenular keratitis and conjunctivitis are readily curable by proper diet.

DR. J. STEELE BARNES, Milwaukee, dwelt on the importance of the study of the pathology of the eye. When the pathology is established, treatment is easy. Strange to say, trachoma has largely disappeared from Wisconsin. Cleanliness is the important point in gonorrheal conjunctivitis.

DR. BLACK said that the orthoptic treatment of squint must be carried over a long period of time before results are obtained, but if the treatment is begun before the child has reached the age of 7 the squint can be corrected without operative procedure.

X-Ray Injuries.

DR. OTTO H. FOERSTER, Milwaukee, read this paper. We are sufficiently informed as to the conditions leading to the development of *x*-ray burns to avoid producing them in almost all instances. The distinctive type of burn involves the subcutaneous tissue, produced ulceration which may be very deep, is extremely painful, and successful treatment is difficult. *X*-ray burns are due to the actinic properties of the rays themselves. Idiosyncrasy to the rays exists. Patients have often been recklessly exposed at close range for periods varying from twenty to thirty minutes, on successive days, and this practice invariably leads to severe dermatitis or to the most terrible type of burn. Recklessness and unfamiliarity with proper technic have done much to bring discredit on a method which, in skilled hands (to whose use the *x*-ray should be confined), is as safe a procedure as any in medicine.

DISCUSSION.

PROF. CHARLES R. BARDEEN, Madison, said that the *x*-rays are extremely dangerous except in the hands of skilful operators.

DR. GEORGE SAUNDERS, Superior, reported good results from the *x*-ray in nearly all kinds of skin diseases, in mild cases of epitheliomata, in enlarged cervical glands and in incipient tuberculosis.

DR. FOERSTER emphasized the fact that proper protection of operator and patient excludes the possibility of danger. The *x*-ray is contraindicated in any skin condition which can be cured by other means without leaving a scar.

The Physician in His Relation to Contagious Diseases and the Public.

DR. C. A. HARPER, Madison, emphasized the duty of the practitioner to diagnose contagious diseases as promptly as possible, to assist the authorities in the proper enforcement of all sanitary and hygienic measures, and to insist on quarantine immediately after diagnosis. Protection to the public is of primary importance. The physician, public health officials and the public should work in harmony and with a view to the extinguishment of contagious disease.

DISCUSSION.

DR. H. J. ORCHARD, health officer of Superior, remarked that physicians are too apt to look to the protection of their patients rather than to the protection of the public. In many instances it is very difficult to secure isolation in contagious diseases. There is lack of harmony between the health authorities and the people. The important point is to avoid the exposure of the public. But health officials should not be unreasonable with respect to quarantining flat buildings, hotels, etc.

PROF. CHARLES R. BARDEEN emphasized the point that the treatment of quarantinable cases is really secondary to the protection of the public. It is the physician's duty to report contagious diseases to the proper officials immediately and then it lies with the health officer to enforce the quarantine.

DR. JOHN BAIRD, Superior, opposed quarantining in smallpox, as the public can protect themselves by vaccination.

DR. EDWARD EVANS, La Crosse, endorsed the position of Dr. Baird and thought the society should soon go on record to that effect. Health officials should always be well qualified experts. Schools and school children especially should be frequently and thoroughly examined.

DR. FOERSTER thought vaccination should be followed up; if that is done immunity against smallpox will be absolutely secured.

DR. JULIUS NOER, Stoughton, advocated the abandonment of quarantine for smallpox. Quarantine laws in contagious diseases are not obeyed because the people do not favor them.

DR. HERMAN GASSER, Platteville, favored compulsory quarantine as long as vaccination is not compulsory.

DR. WILLIAM B. EICHER, Boscobel, thought the society should take a firm stand for vaccination and pay less attention to quarantining for smallpox. This would remove the skepticism of the people regarding the efficacy of vaccination.

Variola.

DR. J. P. COX, Superior, read a paper on this subject. Vaccination renders the subject absolutely immune to smallpox. Every vaccination can and should be made aseptic. But until non-belief in vaccination is overcome, vaccination and quarantine should work hand in hand to afford the maximum of immunity. The manufacture of vaccine should be more carefully supervised by the government in order to prevent the distribution of impure virus.

DISCUSSION.

DR. H. J. O'BRIEN, Superior, said the physician should follow up his vaccination. If this were done there would be less skepticism as to the value of vaccination.

DR. W. T. SARLES, Sparta, declared that vaccination affords absolute immunity, but quarantine should be retained until compulsory vaccination is established. In vaccinating, wash the arm with warm water and soap and dry it with gauze; put the lymph on; scarify the arm; let the case go without dressing, for secondary infection can not take place for at least four days; at the end of four days a light gauze dressing or a gelatin shield may be put on. Secondary infection never occurs until the subject gets a sore arm.

DR. EICHER expressed the hope that there will be some change made in the quarantine laws which would give the people an opportunity to realize that the medical profession of the state have absolute faith in vaccination.

DR. E. L. BOOTHBY, Hammond, opposed the abolition of quarantine in smallpox cases. Faulty technic has shaken the faith of the people in vaccination. Instruments should be as thoroughly sterilized as in surgical cases; the arm should also be sterilized. There is much worthless lymph on the market.

DR. C. A. ARMSTRONG, Boscobel, argued for simplicity of technic. A little sterile cotton, sterile gauze, zinc oxid ointment, the needle that comes with the tube, and a match, are all one needs.

DR. PERRY thought the health department would furnish uniform vaccination certificates; if that were done the work would be more carefully looked after and successfully followed out.

DR. FOERSTER said that if quarantine is abolished Eddyites and others who refuse vaccination will spread the disease. Many graduates of medical schools have never seen a case of contagious disease. How can they make a differential diagnosis? In vaccinating little children it is well to use a 15 per cent. solution of caustic potash to dissolve off the superficial layers of the skin.

DR. HARPER felt that the objection to raising quarantine in smallpox is the injustice it would do to innocent children. However, there is a law now in effect which practically makes vaccination of school children compulsory. It is not safe to rely on disinfection. Many of the disinfectants on the market are worthless.

Direct Transfusion of Blood.

The annual address in surgery, by Dr. George W. Crile, Cleveland, professor of surgery in the medical department of the Western Reserve University, related to certain clinical and experimental observations on the symptomatology and treatment of hemorrhage and some observations on the direct transfusion of blood. The paper treated of the technic, mechanics and therapeutics of the subject, and eight cases were described. In these cases the direct transfusion of similar blood has afforded (a) complete relief for acute hemorrhage, (b) complete stoppage of hemorrhage in four cases of chronic pathologic hemorrhage from the bowels and partial stoppage and relief in a similar case, and (c) complete stoppage of uterine, nasal, subcutaneous and rectal hemorrhages in a case of carcinoma of the gall bladder, with sufficient stimulation of the patient to permit an exploratory laparotomy.

Symposium on Puerperal Sepsis.

The diagnosis and clinical history were discussed and cases described by DR. GEORGE SAUNDERS, Superior.

DR. J. M. DODD, Ashland, discussed the surgical treatment. He said that here is a septic wound to treat and one must (a) remove the septic material as far as possible, (b) neutralize the septic matter that remains, and (c) provide drainage. The septic membrane should be handled very gently. Irrigation should be employed. Iodoform is an ideal remedy.

DR. H. L. ROSENBERY, Wausau, said that the serum treatment, begun early, is destined, if we reason from analogy, to be ideal.

DR. HERMAN GASSER, Platteville, read a paper on what does disease mean.

Approve State Medical School.

The following resolution was adopted:

Resolved, That the State Medical Society of Wisconsin heartily endorses the action of the state legislature in establishing a college of medicine at the University of Wisconsin, and the proposed plan of the regents to develop the important departments of pharmacology and pathology.

PROCEEDINGS OF HOUSE OF DELEGATES.

DR. W. T. SARLES, reported on the work of the House of Delegates of the American Medical Association at Atlantic City.

DR. E. L. BOOTHBY, Hammond, presented reports from the various councilors, showing an improved condition of affairs.

Progress in Medical Legislation.

The present members of the committee on public policy and legislation were re-elected. Dr. J. J. McGovern presented a report of the work done during the past year. He said that great progress has been made in medical legislation. Two bills were passed forbidding newspaper advertising with reference to diseases of the sexual organs; these since July 1 have been obeyed. One of the bills forbids the newspaper from taking the advertisement, and another forbids any one from placing any such advertising. A third bill embodies the Indiana law regarding the definition of medicine.

To Organize Medical Defense.

A committee was appointed to consider the question of medical defense and to report at the next meeting. The committee consists of Drs. G. E. Seaman, J. J. McGovern and H. B. Hitz, Milwaukee; Edward Evans, La Crosse; Julius Noer, Stoughton; L. H. Pelton, Waupaca, and C. S. Sheldon, Madison.

Dr. Noer introduced the following resolutions, which were adopted:

Resolved, That the committee on medical defense be and hereby is instructed to prepare resolutions for submission to the county societies for a referendum vote on the question of protective insurance recommended by Dr. Sheldon's report for 1907. Be it further

Resolved, That in case the vote by the county societies is favorable, then the above-named medical defense committee hereby is empowered and instructed to proceed with the organization of an insurance association in connection with the State Medical Society. Provided that such organization shall not become operative till after the question has been submitted to and passed on by the council of the Wisconsin State Medical Society at its meeting in January, 1908.

Election of Officers.

The following officers were elected: President, Dr. W. E. Ground, Superior; vice-presidents, Drs. Byron M. Caples, Waukesha; Herman Gasser, Platteville; E. S. Hayes, Eau Claire.

Milwaukee was selected as the place of holding the next annual meeting, time to be fixed later.

Three members of the council were appointed, Dr. C. A. Armstrong of the Fourth, Dr. Dewey of the First and Dr. G. T. Dawley of the Ninth district. Dr. L. H. Pelton of Waupaca was elected a delegate to the American Medical Association. Dr. G. Windesheim was elected his alternate, Drs. Sarles and Caples holding over. Dr. J. V. Mears was re-elected councilor from the Fifth district, and Dr. C. J. Combs, Oshkosh, was elected councilor of the Sixth district. The resignation of Dr. W. T. Sarles, of the Seventh district, was accepted and Dr. Edward Evans was appointed in his place.

On motion the action of council to pay expenses of delegates to Council on Medical Legislation, A. M. A., was approved and Dr. G. E. Seaman was elected delegate.

The annual report of the committee on laws and legislation was submitted in executive session and accepted.

A motion made by Dr. Sarles was seconded and carried unanimously that the council be empowered to make such per capita assessment as they see fit, not to exceed one dollar, to defray the expenses of the legislative committee.

By a unanimous vote the contract with the *Wisconsin Medical Journal* for the publication of the proceedings of the society was renewed for another year.

Resolutions.

The following resolutions were unanimously adopted:

WHEREAS, Certain old line life insurance companies insist on the payment of but $3.00 for examination, including the chemical examination of urine, be it

Resolved, That it is the sense of this society that no such examination should be made for less than $5.00.

Resolved, That it is the sense of this society that the minimum fee for examination in assessment societies should be $2.00.

WHEREAS, The Public Health Defense League has been organized for the purpose of protecting against imposition by quacks and "patent medicine" concerns, therefore, be it

Resolved, That the State Medical Society of Wisconsin congratulates the Public Health Defense League and pledges its support in furtherance of these objects.

Danger of Introduction of Sleeping Sickness Into India.—Consul-General Michael, at Calcutta, reports that the comparatively recent introduction of bubonic plague into India (1897), and its rapid and fatal spread through the country, have rendered Europeans and Hindus uneasy on the subject of sleeping sickness. Owing to the constant communication between India and Africa, the going and returning of native Hindus, who emigrate thither to work for a time and then return to India, it is feared that the germ of the disease may be brought back by returning Hindus and thus another scourge be introduced into the country. For this reason the deliberations of the African colonial conference, now being held in London, on the subject of combating disease, are of uncommon interest to the people of India.

Book Notices

TICS AND THEIR TREATMENT. By Henry Meige and E. Feindel, with a Preface by Prof. Brissaud. Translated and Edited with a Critical Appendix by S. A. K. Wilson, M.A., M.B., B.Sc., Resident Medical Officer, National Hospital for the Paralyzed and Epileptic, London. Cloth. Pp. 386. Price, $2.50. New York: William Wood & Co., 1907.

"*Les Tics et Leur Traitement*" was first published in 1902 and was quickly recognized as an authority. It is a logical, learned and practical exposition of a most complicated subject and a careful study of it will go far toward preventing the blunders, so commonly observed, in the differential diagnoses between a simple muscular spasm, a tic and a chorea. As these all differ in their etiology and nature, a correct diagnosis is an absolute *sine qua non* for correct treatment and a favorable prognosis. By clearly defining the term tic, giving it a narrow and precise meaning, and indicating its uniform pathogenesis and essential nature, the authors have done valiant service in dissipating somewhat the confusion surrounding a certain type of muscular jactitation. A tic is not the same as a spasm or a chorea, though superficially it bears a close resemblance to both. In the author's own words, "a tic is a co-ordinated purposive act, provoked in the first instance by some external cause or by an idea; repetition leads to its becoming habitual, and finally to its involuntary reproduction without cause and for no purpose, at the same time as its form, intensity and frequency are exaggerated; it thus assumes the character of a convulsive movement, inopportune and excessive; its execution is often preceded by an irresistible impulse, its suppression associated with malaise. The effect of distraction or of volitional effort is to diminish its activity; in sleep it disappears. It occurs in predisposed individuals who usually show other indications of mental instability" (p. 260). As tic is thus seen to be "a psychomotor affection" with "two inseparable elements in its constitution, a mental defect and a motor defect," it is distinguishable from a mere spasm, which "is the motor reaction consequent on stimulation of some point in a reflex spinal or bulbo-spinal arc" (p. 37) as from a chorea with its "inco-ordination," its "amorphous, indefinable and erratic" muscular play, its want of "succession of similar movements," its tendency to "unilaterality" and other special features (p. 280). In consonance with this conception of tic, the authors explain the peculiarly discouraging prognosis belonging to it and its proneness to relapse or reappear in another form. Under prolonged disciplining and re-educational treatment, to which the authors, of course, give first place, they find that the prognosis is far from being as bad as heretofore declared to be. It "depends solely on the mental state of the patient" (p. 293). Beginning with an elaborate history of a typical case—the report occupying the entire first chapter and being largely autobiographic in character—the authors take up the etiology, pathology, symptomatology, diagnosis and treatment of the tics in the remaining eighteen chapters. Abundant illustration is made from the writers' own large clientele and the case reports found in the current literature. In a masterly and attractive way the argument, based on close logic, deep psychology and modern scientific physiology, moves steadily and convincingly along until in the end one is all but forced to believe that at last the final word has been said on these perplexing tics.

PULMONARY TUBERCULOSIS. Its Modern and Specialized Treatment. By Albert Philip Francine, A.M., M.D., Instructor in Medicine, University of Pennsylvania. Second Edition. Illustrated. Cloth. Pp. 266. Price, $2.00. Philadelphia and London: J. B. Lippincott Co., 1907.

To the specialist this book may seem to contain little not already known to him; to the general practitioner, however, it will prove of great value. We differ with the author in his statement that the general practitioner can not treat tuberculosis with success, because he is not qualified to do so. With such a book as this is a guide, the general practitioner will surely be able to treat the disease with a reasonable degree of success if he is possessed of an average amount of diagnostic skill, common sense, tact, etc. The modern treatment of pulmonary tuberculosis is systematically and carefully considered. The importance of rest when there is fever, the true place of exercise, of pulmonary gymnastics and of massage, the necessity of careful attention to the diet and of individualized forced feeding, the beneficial influence of sunshine, fresh air and of suitable climate, all these questions are discussed in detail and with a sane, judicial decisiveness. The use of tuberculin as an aid to diagnosis is considered, as well as its therapeutic use, and due emphasis is laid on the necessity of employing small initial doses for either purpose. Serotherapy, including the use of sera for combating secondary infections, e. g., streptococcic, is taken up, and also the use of drugs and the treatment of special symptoms such as cough, pain, hemoptysis, night sweats, etc. It is somewhat surprising, after reading the author's views as to diet and hygiene, views with which we must heartily agree in the main, to note the importance he attaches to the use of drugs. Creosote and nitroglycerin are advocated most warmly, and the latter given, as it seems to us, with unusual freedom on slight indications.

A chapter on general considerations and one on prophylaxis close the book except for the reprinting of the excellent "Hints and Helps for Tuberculous Patients," by Charles Minor of Asheville, N. C.

The views of other American specialists in tuberculosis are freely cited and occasionally those of continental writers, especially those of Cornet. The book is written in an unusually pleasing style that makes it easy and enjoyable reading. A few typographic errors that, perhaps, ought not to be expected in a second edition, were noted. The print is clear, the illustrations well executed and instructive. The book will do much good if it shall come into the hands of those who, in office, hospital or house-to-house practice, have to decide on the best plan of treatment for this all too common disease. It is a book, too, that can be read and studied by the intelligent layman who has tuberculosis or in whose family there is a case of tuberculosis; he will surely gain a clear conception of what his physician is striving to do in the way of treatment and will more efficiently cooperate with him in his efforts to effect a cure.

NEPHRITIS. A Manual of the Disease Commonly Called Nephritis or Bright's Disease and of Allied Disorders of the Kidneys. By Seelye W. Little, M.D. Cloth. Pp. 134. Price, $1.25. New York: The Grafton Press, 1907.

This is an odd mixture of science, common sense, pseudo-science and evolutionary theories applied to the subject of Bright's disease. It is largely taken up with telling how little is really known about nephritis and how mistaken most of us are in our conceptions of the disease and treatment of it. There is some truth in it, sometimes epigrammatically put, but most of the space is taken up with stating and restating that civilization with its meat, alcohol, clothes and strenuous physical and mental life is responsible for nearly all cases of Bright's disease, and that a temperate life with avoidance of excess of food, especially proteid food—and with care as to environment, will help in warding off Bright's disease or will enable a kidney that is incompetent to perform the unreasonable task ordinarily put on it by civilized man, to be able to functionate if the exorbitant demand be lessened. Even though much that its stated as new is in reality trite, and in spite of the fragmentary and rambling presentation of the subject, there is yet enough of forcibly put truth in the book to warrant the spending of an hour or two in its perusal. The discussion of the dietetics of nephritis, taken largely from von Noorden and Chittenden, will appeal to many who wish exact statements as to food composition and nutrient value.

ESSENTIALS OF CHEMICAL PHYSIOLOGY for the Use of Students. By W. D. Halliburton, M.D., LL.D., F.R.S., Fellow of the Royal College of Physicians. Sixth Edition. Cloth. Pp. 258. Price, $1.50. New York and London: Longmans, Green & Co., 1907.

Although the original plan of the book, the arrangement into twenty-six lessons, remains unchanged, the author has subjected the text to such revision as was necessitated by the increased and more exact knowledge of chemical physiology. The chapter on protein has undergone the greatest change, and is far more extensive than it was in previous editions. The sections relating to coagulation of the blood and to respiration have also been carefully revised. Many new illustrations are added, thus increasing the value of the book. The appendix is deserving of special mention, inasmuch as it details the use of apparatus which should be found in the laboratory of every practitioner.

Marriages

JOHN EMERSON HEALD, M.D., to Miss Frances Hartley, both of Comanche, Iowa, August 14.

CHARLES J. SELLARS, M.D., Pittsburg, Pa., to Miss Alice J. Baldwin, at Baltimore, August 15.

THORNTON C. METZ, M.D., Cumberland, Md., to Miss Rose Dickel, at Cumberland, August 14.

HERBERT N. LEETE, M.D., Algoma, Wis., to Miss Ruth I. Eaton, at Valparaiso, Ind., June 26.

WILLIAM J. LAVIN, M.D., to Miss Margaret Gallaher, both of Lexington, Ky., at Cincinnati, July 2.

W. OTTO WEISKOTTEN, M.D., Utica, N. Y., to Miss Sadie I. Pendleton of Rochester, N. Y., August 6.

W. WATERS STONESTREET, M.D., Ohiopyle, Pa., to Miss Old Summit Trauty, at Baltimore, August 14.

S. LE ROY ROBINSON, M.D., to Miss Rena Estelle Kiel, both of Baltimore, at Portland, Maine, August 8.

D. EGBERT GURNEY, M.D., Newburg, Md., to Miss Mary Eleanor McShane of Baltimore, August 14.

HENRY L. DEARING, M.D., Braintree, Boston, to Miss Clara Lincoln Robbins of Cambridge, Mass., recently.

BENJAMIN T. RAFFERTY, M.D., to Miss Lizzie Dean, both of Cloverport, Ky., at Cannelton, Ind., August 18.

WILLIAM R. FRINGER, M.D., to Miss Alma M. Barter, both of Rockford, Ill., at Grand Cascapadia, Que., August 20.

HOWARD A. HANAFORD, M.D., Newport, N. H., to Miss Lida Estelle Hilton of Brooklyn, N. Y., at Newport, June 17.

FRANCIS LE BARON JENNEY, M.D., Chicago, to Mrs. Winifred Ament-Morgan of Indianapolis, Ind., in Chicago, August 21.

Deaths

Theophilus O. Powell, M.D. University of Georgia, Medical Department, Augusta, 1859; a member of the American Medical Association; superintendent of the Georgia State Sanitarium, Milledgeville; who for the last 28 years had given his efforts to the up-building of that institution; president of the Medical Association of Georgia in 1887; once president of the National Medicolegal Society and a member of the American Medico-Psychological Association; a Confederate veteran; died at Tate Springs, Tenn., August 18, from pneumonia, after an illness of ten days, aged 70.

Louis A. Harris, M.D. Albany (N. Y.) Medical College, 1884; for several years health officer of the town of Newburgh, N. Y., and physician to the City and Town Home and Children's Home; assistant surgeon, with the rank of first lieutenant, and assigned to the Tenth Separate Company, N. G. N. Y., died at his home in Newburgh, from cirrhosis of the liver, August 17, after an illness of more than two months, aged 48.

Nathaniel A. Morgan, M.D. University of Pennsylvania, Department of Medicine, Philadelphia, 1847; assistant surgeon in the Third Louisiana Infantry and Fifth Georgia Infantry, C. S. A., during the Civil War, and since that time a practitioner of Texas; president of the board of examining physicians of the thirteenth district for five years; an invalid for the last 12 years, died at his home in Fort Worth, March 14, aged 84.

Seneca D. Powell, M.D. University of Vermont, College of Medicine, Burlington, 1869; vice-president of the Pan-American Medical Congress in 1895; vice-president of the Medical Society of the State of New York in 1898; secretary of the faculty and senior professor of surgery in the New York Post-Graduate School, died at his home in Greenwich, Conn., August 25, after an illness of three years, aged 60.

Charles Stewart Kittredge, M.D. College of Physicians and Surgeons in the City of New York, 1863; a member of the Medical Society of the State of California and the Alameda County Medical Society; a practitioner from 1864 to 1887 in Hawaii; died at his home in Santa Barbara, Cal., January 10, from subacute pneumonia, after an illness of ten days, aged 74.

Joshua F. Ensor, M.D. University of Maryland School of Medicine, Baltimore, 1862; major and surgeon in the Army during the Civil War; thereafter internal revenue collector and collector of customs at the port of Charleston, S. C., and for the past ten years postmaster of Columbia, S. C., died at his home in that city, August 16, aged 71.

Solon D. Martin, M.D. Transylvania University, Medical Department, Lexington, Ky.; a practitioner of Saline County, Mo., since 1853; surgeon, with the rank of major, in the Confederate army throughout the Civil War, died in the University Hospital, Kansas City, Mo., August 10, from paralysis, after an illness of three years, aged 82.

Patrick J. Prendergast, M.D. Jefferson Medical College, Philadelphia, 1873; director of the public library board of Brooklyn, N. Y., died in the City Hospital, Cork, Ireland, August 16, from injuries received by a fall from a companion ladder on the steamer *Cedric*, on which he sailed from New York two weeks before, aged 57.

Leander J. Jones, M.D. Missouri Medical College, St. Louis, 1876; a member of the Missouri State Medical Association and Jackson County Medical Society; for 10 years president of the Clay County (Mo.) Medical Society, and a pioneer practitioner of Kansas City, died at the home of his son in that city, August 13, aged 79.

William Greaves, M.D. University of Michigan, Department of Medicine and Surgery, Ann Arbor, 1870; a member of the Minnesota State and Rice County medical societies, and one of the most prominent practitioners of southern Minnesota, died at his home in Northfield, in July, aged 64.

Charles Stewart Wurts, M.D. Jefferson Medical College, 1854; for several years treasurer of the Philadelphia College of Physicians; for the last 12 years vice-president of the Cambria Iron and Steel Company, died at the home of his daughter, in Media, Pa., August 14, aged 78.

Samuel Beyea, M.D. College of Physicians and Surgeons in the City of New York, 1892; of New Rochelle, N. Y.; a member of the American Medical Association, died in the Roosevelt Hospital, New York City, August 18, after an operation for the removal of gallstones, aged 45.

Jacob Rinehart, M.D. University of Pennsylvania, Department of Medicine, Philadelphia, 1858; twice a member of the Maryland legislature and judge of the Orphans' Court, died at his home in Frizellburg, Md., August 17, from cerebral hemorrhage, aged 73.

Amasa E. Field, M.D. Rush Medical College, Chicago, 1895; a member of the Illinois State and DuPage County medical societies; died at his home in Warrenville, Ill., August 23, from tuberculosis, after an illness of more than two years, aged 48.

Robert S. Beckham, M.D. Medical College of the State of South Carolina, Charleston, 1858; for many years a practitioner of Pleasant Hill, S. C., died at his home in Kershaw, S. C., from paralysis, August 16, after a prolonged illness.

Milton Blatchley Axtell (Registration, Wisconsin, 1899); a member of the Wisconsin State and Buffalo-Pepin Counties medical societies; for half a century a practitioner of Pepin, died at his home in that village, August 3, aged 81.

Ernest E. Knauer, M.D. Marion-Sims College of Medicine, St. Louis, 1896; of Duquoin, Ill.; county coroner for several years, died in Denver, recently, after an illness of several months, and was buried at Duquoin, August 21.

Morris Shanks, M.D. Baltimore University School of Medicine, 1891; of Baltimore, died at the Baltimore City Hospital, August 13, three days after an accidental fall in which he suffered a fracture of the skull, aged 38.

August Sander, M.D. Medical College of Ohio, Medical Department, University of Cincinnati, 1895; (Examination, Missouri, 1883); a practitioner of Marole Hill, Mo., for 51 years, died at his home, August 12, aged 73.

M. D. Hopper (Years of Practice, Ky.); a member of the Kentucky State and Russell County medical societies, and a practitioner of Russell County for 47 years, died at his home in Jamestown, August 19, aged 74.

Paul S. Anderson, M.D. Kentucky School of Medicine, Louisville, 1877; of Redlands, Cal., was found dead in Cajon Pass, Nev., by campers, August 9, under circumstances which point to death by violence, aged 51.

Thomas Worthington Henry, M.D. Kentucky School of Medicine, Louisville, 1890; a Confederate veteran and a pioneer practitioner of Dallas County, Texas, died at his home in Dallas, March 17, aged 69.

William B. Ray, M.D. University of Tennessee, Medical Department, Nashville, 1892; died at his home in Scottsville, Ky., August 15, from cerebral hemorrhage, after an illness of only a few hours, aged 48.

Ezra Walker Abbott, M.D. University af Vermont College of Medicine, Burlington; a veteran of the Civil War, of Concord,

N. H., died at the home of his sister, in Contocook, N. H., August 9, aged 86.

Thomas B. Williams, M.D. Western Reserve University Medical College, Cleveland, 1864; for 43 years a practitioner of Angola, Ind., died suddenly at his home in that city, August 16, aged 68.

Eliphalet Wright, M.D. Berkshire Medical College, Pittsfield, Mass., 1841; an active practitioner of Berkshire County, Mass., for 66 years, died at his home in Lee, August 22, aged 90.

Thomas B. Riddick, M.D. College of Physicians and Surgeons, Baltimore, 1893; died at his home in Woodville, N. C., March 4, from nephritis, after an illness of six months, aged 49.

James M. Young, M.D. California Medical College, San Francisco, 1884; for several years a practitioner of Oakland, died at his home in Alameda, Cal., August 14, aged 63.

John W. Beck, M.D. Medico-Chirurgical College of Philadelphia, 1887; died recently in his home in Peckville, Pa., from septicemia due to an infected wound of the hand.

Cornelius W. Burrows, M.D. Detroit (Mich.) College of Medicine, 1871; died at his home in Detroit from heart disease, August 13, after a long illness, aged 68.

R. F. Burge, M.D. Kentucky School of Medicine, Louisville, 1898; died at his home at Roscoe, Texas, August 9, after a lingering illness, aged 48.

Francis J. Ducat, M.D. Detroit (Mich.) College of Medicine, 1896; of Detroit, died suddenly in New York City, August 9, aged 39.

Robert H. Westfelt, M.D. Beaumont Hospital Medical College, St. Louis, 1888; died at his home in Chicago, August 19, aged 55.

James Walkley Sweet (License, Conn., 1893); died at his home in New Haven, Conn., August 18, aged 54.

Medical Education and State Boards of Registration

COMING EXAMINATIONS.

MASSACHUSETTS Board of Registration in Medicine, State House, Boston, September 10-12. Secretary, Dr. Edwin B. Harvey, 159 State House, Boston.

IOWA State Board of Medical Examiners, Capitol Building, Des Moines, September 17-19. Secretary, Dr. Louis A. Thomas, Des Moines.

Rules Governing Examinations in Minnesota.—Dr. W. S Fullerton, secretary of the Minnesota State Board of Medical Examiners, states that the following rules govern examinations for license to practice medicine in that state:

1. An examination is required before a license is granted to practice medicine in Minnesota. The law requiring such procedure went into effect July 1, 1887, and has been enforced since that date.

2. Each applicant is required to make an affidavit setting forth his age, place of residence, preliminary education, time and place of each course of medical lectures, and date of graduation. The affidavit must be corroborated by the exhibition of his diploma or a certificate from the dean of the medical college showing that he has completed the prescribed number of courses and is a candidate for graduation. Graduates of medical colleges granting advanced standing for work done at other than medical colleges shall not be eligible to the examinations given by this board.

Beginning June, 1912, all applicants for the examination for license to practice medicine in this state, graduating in that or a subsequent year, must have satisfied all the entrance requirements, and completed the first two years' work of the College of Science, Literature and the Arts of the University of Minnesota, or present credits for a course elsewhere which is ruled by the said college as equivalent thereto; provided that a medical student may be matriculated with a condition in not more than one full year subject or two half year subjects; and provided further that the condition or conditions be made up before beginning the second annual medical course counted toward the medical degree.

Minnesota medical schools and Minnesota medical students shall not be discriminated against by the recognition of any medical school outside the state whose minimum preliminary requirements standard is less than that fixed for Minnesota.

3. Each applicant, if he graduated or completed his final course of lectures after Jan. 1, 1899, must show proof that he has attended four full courses of lectures at a recognized medical college, no two courses being in the same year.

4. Each applicant, if he graduated after July 1, 1887, and prior to Jan. 1, 1899, or completed his final course of lectures during that period, must show proof that he has attended three full courses of lectures at a recognized medical college, no two courses being in the same year.

5. Applicants who graduated at a recognized medical college prior to July 1, 1887, must show proof of having attended two courses of lectures at a medical college.

6. A fee of ten dollars must accompany the application. This fee is not returned in case of failure.

7. Examinations are always in charge of some member of the Board of Examiners.

8. Each candidate is known by his number, which is arranged as follows: Envelopes are numbered and each contains a blank bearing the corresponding number, on which the applicant writes his name and address. This completed blank is returned by the applicant to the envelope and the envelope sealed by him.

9. Each candidate places on his answer papers the number given him and also the year of his graduation. No other marks of identification are allowed on the answer papers.

10. The answer papers are collected and at once sent by express to the member of the board having charge of that subject. Such member examines the answer papers and marks each candidate by placing the marking opposite the candidate's number. These markings are sent to the secretary, who tabulates them and presents the same to the members of the board at a meeting which is held shortly after each examination. When the markings are completed the envelopes containing the names are opened and these names are placed opposite the corresponding numbers.

11. No dishonest methods are tolerated and any candidate who disregards this rule is debarred from further examination. This rule includes giving or obtaining aid.

12. Ten questions are given on each paper and all subjects for examination are covered by the ten question papers given.

13. The time allowed for each examination paper shall not exceed two hours.

14. No candidate is allowed to leave the room after the question papers have been distributed, until he has completed his answers and delivered them to the member in charge.

15. The examination is in writing and in the English language. If any candidate is unable to write in the English language, he will be allowed to write in his native language, provided he pays an extra fee of fifteen dollars, to cover the cost of translation.

16. A general average of 75 per cent. must be attained.

17. Candidates who fail to receive a license at any examination must be re-examined in all branches.

18. Handwriting of candidates must be legible and orthography must not be such as will disgrace the medical profession.

19. Candidates from all schools shall answer in common all questions submitted except the questions on materia medica which are adapted to the school of practice accepted by the candidate. The answer papers on subjects peculiar to any one school of medicine are sent to the members of this board who are representatives of such school.

20. Candidates shall submit to an examination in the following branches, to-wit: Anatomy, physiology, chemistry, histology, materia medica, therapeutics, preventive medicine, practice of medicine, surgery, obstetrics, diseases of women and children, diseases of the nervous system, diseases of the eye and ear, medical jurisprudence, and such other branches as the board shall deem advisable.

21. Applicant must furnish a recent unmounted photograph of himself attested to before a notary public, to accompany his application.

Michigan May and June Reports.—Dr. B. D. Harison, secretary of the Michigan State Board of Registration in Medicine, reports the written examinations held at Grand Rapids, Detroit and Ann Arbor, May 11-13, and June 11-13, 1907, respectively. The number of subjects examined in was 14; total number of questions asked, 100; percentage required to pass, 75.

At the examination held at Grand Rapids, May 11-13, the total number of candidates examined was 8, of whom 6 passed and 2 failed. The following colleges were represented:

College.	PASSED Year.	Grad.	Per Cent.
Grand Rapids Med. Coll.	(1907)	77.3, 79.7, 82.1, 82.4,	82.8
Illinois Medical College	(1907)		80.1

FAILED.

Grand Rapids Medical College ..... (1907) 68.7, 71.

At the examination held at Detroit, May 11-13, the total number of candidates examined was 81, of whom 80 passed and 1 failed. The following colleges were represented:

College.	PASSED. Year Grad.	Per Cent.
Detroit College of Medicine	(1902) 77.7; (1905) 84; (1906) 75.6; (1906) 75, 75, 75, 75.3, 75.6, 75.8, 75.8, 76.3, 76.6, 76.8, 77.5, 77.5, 77.6, 78, 78.2, 78.7, 78.7, 78.8, 78.9, 79.5, 79.5, 79.7, 80.1, 80.4, 80.5, 80.6, 80.7, 80.8, 80.9, 81.1, 81.2, 81.2, 81.3, 81.3, 81.6, 81.6, 81.6, 81.8, 81.9, 82.1, 82.2, 82.3, 82.5, 82.6, 82.8, 82.6, 83.6, 83.9, 84.2, 84.3, 84.3, 84.7, 84.8, 85.6, 85.9, 86.6, 86.8, 87.9, 88.5, 88.8, 89.1, 90.4, 91.	
Detroit Homeopathic College	(1906) 75; (1907) 76.6, 76.6, 80.1, 81.2, 81.4, 83.1, 83.7, 86.9.	
University of Michigan, Homeo. Dept.	(1907)	81.8
University of Michigan	(1893)	75.3
Michigan College of Medicine and Surgery	(1892)	75.2
Miami Medical College	(1906)	84.2
Meharry Medical College	(1905)	75.5

FAILED.

Detroit College of Medicine ..... (1907) 68.1

At the examination held at Ann Arbor, June 11-13, the total number of candidates examined was 59, of whom 58 passed and 1 failed. The following colleges were represented:

College.	PASSED. Year Grad.	Per Cent.
University of Michigan	(1906) 87.8; (1907) 80.6, 82.9, 82.9, 82.9, 83.2, 83.3, 83.3, 83.5, 84, 84.9, 85, 85, 85.5, 85.8, 86.4, 86.4, 86.5, 86.7, 86.8, 86.9, 87.2, 87.5, 87.5, 87.5, 87.5, 87.7, 87.9, 87.9, 88, 88, 88.1, 88.3, 88.6, 88.9, 89, 89, 89, 89.4, 89.5, 89.6, 90.1, 90.1, 90.2, 90.6, 91.6, 92.7, 93.6.	
University of Michigan, Homeopathic Dept.	(1907) 75, 82.4, 83.4, 84, 86, 86, 87.7, 88.1, 88.7.	
Ohio Medical University	(1907)	91.3

FAILED.

American Medical College, St. Louis ..... (1903) 67.5

Ohio June Report.—Dr. George H. Matson, secretary of the Ohio State Board of Medical Registration and Examination, reports the written examinations held at Cleveland, Columbus and Cincinnati, June 10-12, 1907. The number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 164, of whom 156 passed and 8 failed. The following colleges were represented:

College.	PASSED. Year Grad.	Per Cent.
Yale Medical School	(1905)	85.
College of P. and S., Chicago	(1907)	88.
Illinois Medical College	(1906)	75.
Central Coll. of P. and S., Indianapolis*	(1903)	77.
University of Maryland	(1907)	85.
Johns Hopkins Medical School	(1905)	90.
Harvard Medical School	(1902)	75.
University of Michigan, Homeo. Dept.	(1907)	91.
Cornell University	(1906)	85.
College of P. and S., New York	(1907)	82.
Long Island College Hospital	(1883) 81; (1907)	76.
University of Buffalo	(1907) 87,	88.
Bellevue Hospital Medical College	(1902)	79.
New York Homeo. Medical College	(1906)	76.
Medical College of Ohio	(1907) 75, 78, 79, 80, 81, 82, 82, 83, 84, 84, 84, 85, 85, 86, 86, 86, 87, 87, 87, 88, 88, 89, 89, 89, 89, 91, 91, 91.	
Pulte Medical College	(1907) 76, 82, 85, 89, 91.	
Miami Medical College	(1906) 81, 89; (1907) 78, 79, 79, 79, 79, 80, 80, 80, 81, 82, 83, 84, 85, 86, 86, 86.	
Ohio Medical University	(1907) 75, 80, 83, 85, 83, 84, 84, 85, 86, 87, 87, 87, 88, 90, 90, 90.	
Starling Medical College	(1906) 85; (1907) 75, 77, 77, 77, 79, 80, 81, 82, 84, 84, 85, 85, 85, 86, 87, 87, 88, 89.	
Cleveland Homeo. Medical College	(1907) 79, 81, 81, 89.	
Toledo Medical College	(1907) 84, 85, 85, 86, 87, 90, 92.	
Cleveland College of P. and S.	(1906) 77; (1907) 80, 82, 82, 82, 84, 84, 85, 86, 87, 92.	
Eclectic Med. Institute, Cincinnati	(1884) 79; (1896) 87; (1907) 78, 85, 85, 85, 86, 86, 87, 88, 89, 89.	
Hahnemann Medical College, Philadelphia	(1907) 85,	87.
Jefferson Medical College	(1906)	79.
Western Reserve Univ.	(1907) 76, 79, 82, 83, 86, 87, 90, 90, 91,	91.
Western Pennsylvania Medical College	(1905)	82.
University of Pennsylvania	(1906) 81; (1907)	80.
Western University, London, Ont.	(1907)	85.
University of Naples, Italy	(1905)	78.

FAILED.

Hering Medical College	(1894)	59.
University of Maryland	(1906)	69.
Cleveland College of P. and S.	(1907)	73.
Cleveland Homeopathic Med. College	(1907)	66.
Eclectic Medical Institute, Cincinnati	(1906)	71.
Ohio Medical University	(1906)	67.
Starling Medical College	(1906)	69.
Meharry Medical College	(1906)	72.

*In 1905 this school merged with Fort Wayne College of Medicine and Medical College of Indiana to form Indiana Medical College, School of Medicine, Purdue University.

West Virginia July Report.—Dr. H. A. Barbee, secretary of the State Board of Health West Virginia, reports the written examination held at Charleston, July 9-11, 1907. The number of subjects examined in was 9; total number of questions asked, 120; percentage required to pass, 80. The total number of candidates examined was 71, all of whom passed. Two reciprocal licenses were granted at this examination. The following colleges were represented:

College.	PASSED. Year Grad.	Per Cent.
George Washington University	(1907)	91
College of P. and S., Chicago	(1907)	90
University of Louisville	(1904) 85; (1905) 86; (1907) 84, 84, 86, 86, 87, 87, 88, 88, 89, 91, 91.	
Kentucky School of Med.	(1905) 80; (1907) 83, 87, 91	
Louisville Medical College	(1905) 82; (1907) 84, 86	
College of P. and S., Baltimore	(1907) 85, 86, 87, 87, 87, 88, 89, 89, 90, 91, 92, 92, 93, 93.	
University of Maryland	(1906) 92; (1907) 89, 95	
Johns Hopkins Medical School	(1905) 90; (1907)	93
Baltimore Medical College	(1907) 88, 89, 90, 92, 92,	92
Maryland Medical College	(1906) 81, 90; (1907) 85,	88
Harvard Medical School	(1907)	96
St. Louis University	(1907)	86
Barnes Medical College	(1905)	85
University of Pennsylvania	(1906)	90
Medical College of Ohio	(1906)	93
Ohio Medical University	(1907)	89
Eclectic Med. Institute, Cincinnati	(1907) 85,	92
Jefferson Medical College	(1907) 86, 89,	93
University of the South	(1906)	84
Medical College of Virginia	(1906) 82; (1907) 82, 85, 85, 88,	88
University Coll. of Med., Richmond	(1907) 87,	88

LICENSED THROUGH RECIPROCITY.

College.	Year Grad.	Reciprocity with.
College of P. and S., New York	(1899)	Virginia
Ohio Medical University	(1905)	Kentucky

Medicolegal

Bases for Opinions of Experts—Subjects for Opinions of Non Experts—New Question on Examination.

The Supreme Court of Illinois says, in City of Chicago vs. McNally, a personal injury case brought by the latter party, that it is, no doubt, the rule that the opinions of expert witnesses in cases of this kind should be based on objective, and not subjective, symptoms, and should be the expression of the witness from what is manifest to him, rather than from the words of the person examined. This court has, however, held a physician, when asked to give his opinion as to the cause of a patient's condition at a particular time, must necessarily, in forming his opinion, be to some extent guided by what the sick person may have told him in detailing his or her pains and sufferings. But such declarations, being in favor of the party making them, are only competent when made a part of the res gestæ (essential circumstances of the occurrence) or when made to a physician during treatment or on an examination prior thereto, and without reference to the bringing of an action to recover damages for the injury complained of, unless the examination should be made at the instance of the defendant with a view to the trial.

This court has also held that, where a previous habit of study is essential to the formation of an opinion sought to be put in evidence, only such persons are competent to express an opinion as have by experience, special learning, or training, gained a knowledge of the subject matter on which an opinion is to be given, superior to that of an ordinary person.

Witnesses not experts are, however, allowed to express opinions when the subject matter to which the testimony relates is such as in its nature can not be reproduced and described to the jury precisely as it appeared at the time. Opinions may be given by non-expert witnesses as to the state of health, hearing or eyesight of another, or the ability of another to work and walk, or use his arms or legs naturally, or whether such person is apparently suffering pain, or is unconscious, in possession of his or her mental faculties, intoxicated, excited, calm, etc. A physician can ascertain from outward signs whether a person is nervous, feeble, irritable, suffering pain, or capable of performing certain mental labor.

A physician having testified that the condition in which he found the plaintiff on a certain date must have been caused by some traumatism or injury, it was insisted that the question as to the cause of her condition was purely a question of fact for the jury, and that the answer of the witness invaded that province. The court, however, does not think that this contention could be maintained.

On cross-examination counsel for the city attempted to ask the plaintiff whether she was willing to submit to a physical

examination as to her injuries. Before the question had been entirely put to the witness an objection was made, and counsel for the respective parties retired with the court to his chambers to consider the propriety of the question out of the hearing of the jury. The trial judge ruled that he would permit the record to show that the question was sought to be asked in the presence of the jury and the request was refused. On returning to the courtroom the plaintiff was asked whether she was willing to submit to a physical examination. Objections were sustained to the question, and this ruling was assigned as error. The Supreme Court says that it has held in a great many cases that the plaintiff in an action of this kind can not be required to submit to a physical examination as to his or her injuries. But the question whether or not one may be asked, in the presence of the jury, as to his or her willingness to submit to an examination, has never been before this court for decision. It thinks the question, in the form it was asked, was properly refused.

Liability for Blood Poisoning After Slight Injury.

The Kansas City Court of Appeals says, in the personal injury case of Rosier vs. Metropolitan Street Railway Company, that the plaintiff's injury, sustained while getting on a street car, was apparently a slight one on the shin bone, but it finally resulted in blood poisoning, and for a while his life was threatened. The defendant contended that, in the event it was to be held liable, it should be for the original injury, which appeared to be slight, and ought not to be for the plaintiff's after condition, as it was brought on by his own carelessness in taking care of it. The specific claim of negligence was that the plaintiff treated his wound at the beginning for several days with ammonia, by keeping it bandaged with a dirty cloth, which was the cause for blood poisoning. The evidence to sustain this contention was slight. It was true the plaintiff treated his wound with ammonia, but he said that he bandaged it with a clean linen handkerchief. Shortly afterward he used an ointment prescribed by a physician, and continued to use his handkerchief as a bandage. On cross examination he stated that he put the ointment on twice a day. He was then asked: "You used the same cloth? A. Yes; used the same cloth. Q. And washed it each time? A. No, sir; I kept turning it. Q. Kept on using it? A. I used it to-day and to-morrow, maybe, then turned it and washed it again. Q. You used the same cloth quite a while, did you? A. Yes. Q. How long? A. Well, now, I don't know; I couldn't tell whether I changed—it seems to me that I got a cloth and put around it." A physician testified that the treatment described would likely produce blood poisoning. This instruction of the jury was then asked, and refused: "If the plaintiff used medicine or bandages on the injury complained of, and such treatment caused or produced blood poisoning, then defendant is not liable for any injuries caused by such blood poisoning, and you will not consider the same in making up your verdict." The court thinks that the instruction was objectionable because it did not state the law in the case. It says that the plaintiff would not have been precluded from recovering on the ground that the manner in which he treated his injury produced blood poisoning, if he was not guilty of negligence in doing so.

Admissible Evidence of Paralysis.

The Supreme Court of Illinois says, in Chicago City Railway Company vs. Shreve, a personal injury case brought by the latter party, that the plaintiff claimed, and sought to show on the trial, that she was suffering from paralysis as a result of an injury which she sustained in a collision between a street car on which she was a passenger and a truck wagon, and she called a number of medical experts as witnesses on her behalf, who testified that in their opinion such was the fact. From their testimony it appeared that they had talked with her, and made experiments, by sticking pins into her flesh and manipulating her limbs, to determine whether or not she was feigning paralysis. It was urged that the trial court erred in permitting such facts to go to the jury, and in permitting such witnesses to state to the jury their opinions as to the plaintiff's condition, based on subjective, rather than objective, conditions. But the trial court repeatedly informed the witnesses that they were to base their opinions only on what they had seen, and not on any statements made to them by the plaintiff, or on any physical manifestations of the plaintiff within her control; and in order to more fully exclude from the consideration of the jury all such statements, experiments and manifestations, the trial court gave to the jury, at the instance of the defendant, an instruction which excluded specifically all evidence from the consideration of the jury which could by any possibility be regarded an infringement of the rule against the consideration by them of any subjective condition in the plaintiff brought out during the examination of the expert witnesses. Under these circumstances the Supreme Court does not think that the evidence of the medical witnesses, or the rulings of the trial court in admitting the same, was subject to the criticism made thereon.

May Testify to Mental Condition of Patients.

The Supreme Judicial Court of Maine holds, in the case of Ireland vs. White, that skilful and reputable physicians, although not experts on the subject, may testify to the mental condition of their patients when they have adequate opportunity of observing and judging of their mental qualities. Such conditions testified to is a fact observed, which differs from a conclusion as to legal sufficiency or insufficiency of mental capacity to be deduced in each case from facts proved, under correct rules of law.

Current Medical Literature

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

New York Medical Journal.

August 17.

1 *Hypernephroma. I. W. Blackburn, Washington, D. C.
2 *A Valuable Sign in Exophthalmic Goiter. L. N. Boston, Philadelphia.
3 Physical Reconstruction of School Children by Means of Fresh Air. L. R. Williams, New York.
4 Police Methods for Sanitary Control of Prostitution. F. Bierhoff, New York.
5 Ligation of the External Carotid in Rhinology and Pharyngology. C. Jackson, Pittsburg, Pa.
6 *Malarial Fever as Seen in the Jungle. C. S. Braddock, Jr., Haddonfield, N. J.
7 Profound Mental Disturbance Due to Pelvic Disease Cured by Operation. A. L. Fuller, Winters, Texas.
8 Eczema in Second Year of Life. C. A. Kinch, New York.

1. **Hypernephroma.**—Blackburn gives a well-illustrated histologic study of three cases of hypernephroma of the kidney and one of papilliferous adenoma. In general, the histological evidences of hypernephroma are: 1. The resemblance of the tumor cells to those of the adrenal gland and the "adrenal rests" so frequently present in the kidney and other structures. This is seen in the shape of the cells, their nuclei, and in the degenerative changes in the tumor elements. 2. The absence of transition structure between the tumor and the renal tissue; present in renal adenomata. 3. The tendency of the metastasis to extend by way of the blood vessels rather than the lymphatics. 4. The presence of a thinly walled capillary network among the tumor cells, in this respect resembling the adrenal gland. 5. The presence of large, clear, more or less columnar cells, ranged in irregular rows along the alveolar walls, and in case of the capillary network in direct contact with the endothelial wall. 6. In some forms of hypernephroma an alveolar structure with open gland like acini, sometimes containing free cells and blood, with a stroma consisting of delicate connective tissue and capillaries lined with low columnar cells.

2. **New Sign in Exophthalmic Goiter.**—Boston describes the following sign, found in each of fifteen cases of exophthalmic goiter, after exophthalmos had become conspicuous. The patient is seated with the occiput braced firmly against the back of the chair or wall, and rotates the eyeball upward to the finger of the operator, placed above the head. The patient is directed to follow the operator's hand with the eye, as it is carried from above to below a level with the chin, keeping it about three feet distant from the eyes. In the course of the descent the following phenomena occur: The superior lid

follows downward with the pupil for a short distance, where it rests for an instant, then displays a slight spasm, with apparent slipping back, after which it continues to follow the pupil for an indefinite distance.

6. **Malarial Fever as Seen in the Jungle.**—Braddock gives some notes of his experience as chief medical inspector to the Siamese government. The writer points out that pernicious malarial fever will strike down, in spite of mosquito curtains, every man who lives even for a few days in the deep jungle without clearing it and letting the sun in. Further, that the drinking of unboiled water in the jungle, no matter how clear and sparkling the mountain stream may be, will be followed by fever. The natives appreciate this fact, and never drink a bit from the streams, but always dig wells alongside and let the water filter through.

Boston Medical and Surgical Journal.

August 15.

9 *The Psychic Factor in Disease. G. C. Smith, Boston.
10 *Blood Pressure as a Guide in Treatment of Hemoptysis. E. O. Otis, Boston.
11 *Soluble Bobbin for Intestinal Anastomosis. J. H. Cunningham, Jr., Boston, and H. W. Baker, Rochester, Minn.
12 *Two Cases of Vicarious Menstruation. R. C. Larrabee, Boston.
13 Senile Trepidant Abasia. E. W. Taylor, Boston.

9. **The Psychic Factor in Gastric Disease.**—Smith analyzes the underlying factor in the various forms of the psychic epidemic, amounting almost to a monomania in Boston, now so generally prevalent, and points out its relation to autosuggestion. For the purposes of study, he has taken 100 neurasthenic cases at random and divides them into two great classes: 1. Those individuals born with an inherited predisposition—children of tuberculous, alcoholic, syphilitic, and nervous parents especially—are predisposed to the affection, as the digestion of such patients is readily impaired, and their delicate nervous protoplasm suffers still more from faulty metabolism. Such patients are very susceptible to indigestion, mental or physical shock, fright and emotional disturbances, and from their number, furnish us with the best types of traumatic neurasthenia. A large number of nervous dyspeptics belong to this class, and by carefully watching their numerous bodily sensations, the latter soon become pathologic, and the habit of autosuggestion is established and ere long such patients may become hypochondriacs. 2. Those whose heritage is good, but who acquired the affection by bad environment, improper training in youth at home and in school; persons who worry for fear of not making both ends meet, and those who have habit spasm. Low metabolism was found to be the stigma in the majority of hereditary cases, and in some of the acquired cases. He describes in detail the method of procedure, which is essentially the same as that set forth by Oppenheim in the "Psychotherapeutische Briefe," published in 1906, but Smith does not attempt to carry it out by correspondence, finding office treatment serves the purpose. He considers the nature of fatigue, physical, mental or emotional, as affecting the neurotic, and its erection into an autosuggestive habit, and then discusses in some detail the special application of the method to symptoms, headache, autotoxemia and faulty metabolism. He then sums up the requirements of the physician to practice psychotherapy as follows: 1, A strong personality; 2, thorough knowledge of the patient; 3, considerable knowledge of psychology; 4, broad scientific training. Prophylaxis must always be kept in mind, as such a large percentage of neurotics trace the origin of their affection to their childhood. His experience confirms Barker's view that patients past middle life do not yield so well as those between 20 and 40, being, as they are, more opinionated and more commonly subjects of some organic disease. He adds that, "the chief value of the psychic factor is in the care of the organic diseases, as their functional affections are fast disappearing under the light of better diagnoses." He emphasizes his belief, however, that in recent years the eminent rôle played by psychotherapy is wholly unjustifiable and misleading. He deprecates the incorporation of the science of medicine with theology, for while the fundamental principles of right and wrong may be identical, the deductive processes by which the sciences are built up are essentially different. "Let thorough laboratory research, coupled with careful clinical study, not only of disease, but of humanity, continue in the future, as in the past, to actuate our profession."

10. **Blood Pressure in Hemoptysis.**—In regard to the indications for drugs in hemoptysis, Otis reports the results of 18 cases of treatment by the nitrites or ergot respectively, when the blood tension was taken as soon as possible after the hemorrhage began. An examination of the blood pressure in 320 tuberculous patients showed an average of 124 mm. Hg. The average in men was 128; in women, 115; the highest male average, 140; the lowest, 100; the highest female average, 120; the lowest, 98. The average blood pressure in tuberculous persons was, therefore, considered to be 126. In the 18 cases of hemoptysis the majority showed a blood pressure markedly below the average. Routine treatment was, of course, applied at the beginning, but on recurrence of persistence of bleeding, either ergot or the nitrite in the form of sodium nitrite or nitroglycerin, was tried, according to the indications of the blood pressure. If either failed in any case the other was administered whatever the blood pressure might be. In some cases both were effective, in others ineffective. The author suggests that the blood pressure should be taken as a routine measure in tuberculosis sanatoria. A fall in the blood tension is suggestive of impending hemorrhage, which may perhaps be warded off by ergot. The author's scheme of routine treatment when active treatment seems indicated is as follows: The first essential is a knowledge of the blood pressure of the patient from previous observations; on the occurrence of the hemorrhage, ice, morphin and atropin are administered subcutaneously; and, depending on the amount and rapidity of the hemorrhage, the inhalation of amyl nitrite. A laxative dose of magnesium sulphate is given and, if the bleeding persists or is recurrent, sodium nitrite is given, or nitroglycerin if the blood pressure is high for the individual, or if low, ergotin is injected subcutaneously.

11. **Soluble Bobbin.**—Cunningham and Baker describe a soluble bobbin for use in end-to-end intestinal anastomosis, made from macaroni of a large commercial size, cut into cylinders, three inches long by three-quarters of an inch in diameter. Bobbins of special design were also made. They were sterilized by dry heat. Animal experiments indicate their usefulness in facilitating intestinal suturing, holding the sutured ends in position until firmly adherent, and serving as a conduit of the intestinal contents. At a period of time not under 12 hours or longer than 35, the material is digested and absorbed.

12. **Vicarious Menstruation.**—Larrabee divides extragenital hemorrhages recurring at the menstrual periods into three groups: First, replacement of the uterine flow by bleeding from some other site without general hemorrhagic tendency; the constitutional effect in this group is negligible. Second, cessation of normal flow, with general hemorrhagic tendency, and a picture resembling purpura hemorrhagica; the resulting anemia may prove fatal. Larrabee's first case typifies this form. Third, cases closely allied to, if not identical with hemophilia. A second recorded case exemplifies this condition. Such cases are spoken of as vicarious menstruation, merely because along with the normal menstrual flow there may be an exacerbation or a tendency to bleed, present at other times as well. Uterine menstruation is absent in some cases; in others, as in that quoted, it is excessive.

Medical Record, New York.

August 17.

14 *Treatment of Surgical Tuberculosis by Hyperemia. V. Schmieden, Bonn, Germany.
15 *Ophthalmologic Phase of Diseases of the Accessory Sinuses of the Nose. W. C. Posey, Philadelphia.
16 Relations of Eye to Nose, with Certain General Conditions. C. W. Cutler, New York.
17 *Evolution of Life from the Lifeless. J. Wright, New York.
18 *Manifestations of Paranoia. A. W. Ferris, New York.
19 *Acute Intussusception. J. H. Bradshaw, Orange, N. J.
20 Methods of Teaching Medicine. O. L. Mulot, Brooklyn.

14. **Bier's Hyperemia in Surgical Tuberculosis.**—Von Schmieden describes Bier's treatment as carried out by him. The degree of hyperemia must be considered. "It is absolutely wrong to think that if a little is good more is better." The band should be broad (6 cm.), soft, applied slowly and evenly around the extremity, proximally, but not close, to the tuberculous joint. The bandages must not cause pain, either at the

place of application or in the diseased joint; the limb must remain warm and the pulse entirely unchanged. The bandage is applied once or twice daily, for from one to two hours. In the case of a tender skin the location of the bandage must be changed. No other bandages must remain during the treatment and discharging fistulas must be covered up. The joint should not be kept in fixation. A healed tuberculous joint should always be movable. The end in view is an anatomic healing with maintenance of mobility. The signs of good result are abeyance of pain, disappearance of inflammation and contractures, subsidence of swelling, sclerotization of fungous masses which, with further treatment, are absorbed. Cold abscesses may develop, and should be evacuated and treated with cupping glasses. Considerable time is required, nine months or even longer. Those who wish quicker results must submit to amputation. The treatment is so simple that it can be applied by the patient himself. It is unfortunately inapplicable to the hip joint, and in the knee joint additional measures are necessary. The best results occur with the ankle, elbow and wrist. The exudative form (hydrops) is never treated by hyperemia. Cupping glasses are frequently used in combination with the elastic band.

15. **Accessory Sinuses of the Nose and Eye Symptoms.**—Posey considers contiguity of tissue adequate to account for ocular troubles consequent on nasal conditions. Mere congestion of a sinus may result in eye symptoms. The optic nerve is also affected, through contiguous tissue, in all degrees between simple edema and active retrobulbar inflammation. Edema of the lids is very frequently encountered. Pre-lachrymal abscesses, i. e., the swellings that form at times above the internal palpebral ligament, externally to the lachrymal sac, may be due to sinusitis. Orbital cellulitis of marked intensity may be occasioned by sinusitis resulting from necrosis of ethmoidal sinus walls or suppuration of frontal cells. He also describes an interesting unusual condition, apparently depending on nasal causes, viz., that of a man with a blind spot which appeared in the center of the side of the left eye, in a high wind and freezing weather. There was no sinus trouble or pus center in the nose, but the erectile tissue of the turbinates was exceedingly sensitive, swelling even under routine examination.

17. **Evolution of Life.**—Wright criticises Bastian's recent book on "Archebiosis." While modern science has little to say to plausible theories or *a priori* arguments, some of Bastian's experiments seem without flaw in their plan. As the demonstration of one set of conditions under which spontaneous generation may occur is all that is necessary in order to prove the probability of its occurrence in others, the only way to refute these experiments lies in their repetition, with a demonstration of errors of technic.

18. **Paranoia.**—Ferris lays stress among the manifestations of this disease on systematization of the delusions. A fixed idea becomes a central fact, unchangeable in character. The patient firmly believes in his illusions, which possess an apparently logical, though unreal, character. Reactions are certain and intense, false interpretations frequent, and an intellect comparatively unimpaired, though dominated by a delusion, may be preserved for years. Expansive delusions and a sense of self-importance are common; hallucinations, especially of hearing, are present. It must be remembered that a paranoiac may possess a perfect memory and unimpaired intellect for years, save in regard to the absurdity of his fixed idea, may seem plausible and convincing to the layman, lucid on everything unconnected with his delusion, and capable of carrying on business and conducting himself in social life like sane persons, except in matters in which his delusion is involved. Even here he sometimes realizes that his delusions will be disbelieved and is able to refrain from giving expression to them.

19. **Intussusception.**—Bradshaw, in considering operations in children, emphasizes the following points: 1. The great importance of supplying heat to an infant under one year of age while undergoing so serious an operation as a laparotomy, should be borne in mind. 2. The infant should be well supplied with hot-water bottles all the time while on the operating table. 3. It is well, if the patient is a nursling, to let it take the warm mother's milk as soon as it has come out from the anesthetic. 4. Regular nursing is the best heart stimulant it can receive. 5. When, as in the second case reported, there is profound shock with sepsis, the plan suggested by Murphy for the treatment of general septic peritonitis, of giving hot saline by slow continuous rectal irrigation is distinctly lifesaving. Its effect in washing out the toxins and thereby raising the opsonic index and of increasing the amount of urine secreted, of relieving thirst and changing the dry tongue and the whole septic face of the patient is little short of magical.

The Lancet-Clinic, Cincinnati.

August 17.

21 Treatment of Syphilis. J. C. Paine, Peoria, Ill.
22 *Primary Nasal Tuberculosis. W. Thrasher, Cincinnati.

22. **Primary Nasal Tuberculosis.**—Thrasher reports a case of the hyperplastic variety of apparently primary nasal tuberculosis in a girl aged 15. The nares were completely occluded with tumors of cauliflower appearance, pale gray color, with an abundance of mucopurulent secretion, and springing from the turbinals of both sides and from the bony section. The bulk of the pharynx was filled with similar growths. The microscopic structure consisted of small round cells, scattered among which were numerous giant cells surrounded by epithelial cells; areas of coagulation necrosis and cheesy degeneration were present. Removal and cauterization with lactic and trichloracetic acid were practiced and constitutional treatment was given. A recurrence four years later was treated in the right manner. Seven years later the patient was in excellent health. The prognosis in primary nasal tuberculosis is generally good.

Annals of Ophthalmology, St. Louis.

April.

23 *Rarer Ocular Lesions Associated with Gout or General Lithemia. C. S. Bull, New York.
24 *Papilloma of the Caruncle. C. Loeb, St. Louis.
25 *The Real Cause of Myopia. C. Schulin, Billings, Mont.
26 Case of Alexia in Boy of Fifteen. M. V. Ball, Warren, Pa.
27 Case of Amaurotic Family Idiocy. M. Buchanan, Philadelphia.
28 Two Fatal Cases of Orbital Cellulitis. H. F. Hansell, Philadelphia.
29 Proliferative Uveitis. W. Zentmayer, Philadelphia.
30 Retinitis Proliferating in Character, in Detached Retina of Traumatic Origin. W. T. Shoemaker and C. M. Hosmer, Philadelphia.
31 Ophthalmia: Picture of Intraocular Tumors. J. Fejer, Budapest, Hungary.

23. **Eye Lesions and General Lithemia.**—Bull considers that it is a mistake to regard gout as directly responsible for the vascular lesions in the eye, in gouty patients. The true view he considers to be that the nitrogenous products of metabolism are the cause of both the arterial degeneration and the gout. He deals with conjunctivitis, edema of the eyelids, chorioiditis, retinitis, optic neuritis, and affections of the ocular muscles as manifestations of the lithemic condition, which are often forerunners of an acute explosive inflammatory attack elsewhere in the body, after which the hitherto obstinate eye lesion promptly gets well.

24. **Papilloma of Caruncle.**—Loeb records a case with microscopic examination, because of the rarity of the condition. So far as he has been able to discover, the literature shows only 12 cases reported by Roselli, Veasey, Posey and Shumway, Hirschberg and Birnbacher, Weeks, Parasotti, Testellin, Terrien, Secondi, Kubli and Franke. A probable case is also reported by Desmarres as *encanthis fongueux*.

25. **Myopia.**—Schulin points out that in all the theories of the origin of myopia that have been advanced only the mechanical side of the process has been dealt with, and the fact has been ignored that the general health of the child may have a share in its causation. As a consequence of the examination of over 5,000 individuals during 15 years, he arrives at the conclusion that myopia originates in the general health, being dependent on an autointoxication produced by unhygienic conditions in childhood.

Ohio State Medical Journal, Columbus.

August 15.

32 *Recent Advances in Cardiac Pathology and Diagnosis. G. W. McCaskey, Fort Wayne, Ind.
33 *The Pulse in Diagnosis and Therapeutics. J. B. Ballinger, Bradford.

34 Charlatanry in Treatment of Female Disease. E. Holbrook, Lebanon.
35 The Future of Pediatric Science. W. W. Pennell, Mount Vernon.
36 Conservative Treatment of Tuberculous Arthritis in Children. W. S. Stern, Cleveland.
37 Acute Endometritis. W. K. Rodgers, Columbus.
38 Study in Charlatanry. A. S. Barnes, Columbus.
39 *Difficulties Met with in Demonstrating Spirochæte Pallida. B. R. Leroy, Athens.

32. **Cardiac Pathology and the Pulse in Diagnosis.**—McCaskey in his paper lays great stress on the necessity, in all cases of marked weakness and irregularity of the heart, of a careful study, by graphic methods, of the synchronicity of the different cardiac events, and on a study of the blood pressures, both diastolic and systolic, as a routine procedure in all cases of cardio-vascular disease.

33. **Pulse in Diagnosis and Therapeutics.**—Ballinger emphasizes the importance of the *tactus eruditus*, and urges that we should train our sense of touch to measure the pressure within the artery, and to estimate the thickness and resiliency of its walls.

39. **Spirochæta Pallida.**—Leroy says that by the following method the *Spirochæta pallida* will be found in great numbers, from five to eight in a field, as a constant factor in primary syphilis:

1. All instruments and slides must be scrupulously clean.
2. Do not use mercurial washes on the initial sore as a means of preparation, but rather wash the sore with sterile water.
3. Scarify gently with a knife the surface of the chancre or mucous patch, permitting the blood to "well up" in a good-sized drop. Let stand for some minutes, until the serum is clear; then with loop place serum on slide, using care not to take up many red blood cells. Spread even. Dry in air protected from dust.
4. Fix in pure methyl alcohol for twenty minutes.
5. Stain with Giesma's (Wellcome's tabloid) and at once add an equal amount of distilled water and let stand twenty minutes.
6. Flood stain off with distilled water; dry in air and examine in oil in a good light.

Even now, on examination one may fail to find the organism, for this minute germ "pops" into and out of focus with remarkable quickness, and much depends on careful adjustment. Many microscopes have the "fine" adjustment somewhat too coarse for the ordinary worker; hence the many failures.

Bulletin of Johns Hopkins Hospital, Baltimore.

June-July, 1907.

40 Organization of the Laboratories in the Medical Clinic of Johns Hopkins Hospital. L. F. Barker, Baltimore.
41 Occurrence of Howell's Nuclear Particles in Experimental Anemia of the Rabbit and in Human Blood. R. S. Morris, Baltimore.
42 Blood Formation in the Liver and Spleen in Experimental Anemia. R. S. Morris.
43 Measurement of the Coagulation Time of Blood and Its Application. F. Hinman and F. J. Sladen.
44 Wright's Method of Measuring Alkalinity of the Blood. S. Strouse, Baltimore.
45 *Treatment of Gonorrheal Arthritis by Vaccines. R. I. Cole and J. C. Meakins, Baltimore.
46 *Tuberculo-Opsonic Index and Treatment by Tuberculin. P. C. Jeans and A. W. Sellards.
47 *Study on Opsonins. W. L. Moss, Baltimore.
48 Opsonins in Typhoid Immunity. H. Kilen, Leipzig.
49 *Studies on Specificity of Opsonins in Normal and Immune Serum. F. F. Russell, U. S. Army.
50 New Method of Fixation of Complement in Diagnosis of Meningococcus and Gonococcus Infections. J. C. Meakins, Baltimore.
51 Diversion of Complement in Hemolysis. J. C. Meakins, Baltimore.
52 Production of an Agglutinating Serum for Blood Platelets. R. I. Cole.
53 Blood Pressure and Pulse Form. A. D. Hirschfelder, Baltimore.
54 Variations in Form of Venous Pulse. A. D. Hirschfelder, Baltimore.
55 Rapid Formation of Endocarditic Vegetations. A. D. Hirschfelder, Baltimore.
56 Calcium, Magnesium, Phosphorus and Nitrogen Metabolism and Organic Acidity of the Urine in Case of So-called Phosphatic Diabetes. L. F. Barker and C. Voegtlin, Baltimore.
57 Study of Metabolism in So-called Arthritis Deformans. J. H. King, Baltimore.
58 Method of Preparing Romanowsky Stain. N. M. Harris, Chicago.
59 Operative Treatment of Subdeltoid Bursitis. W. S. Baer, Baltimore.

August.

60 Report of First Two Years' Work in Phipps Dispensary for Tuberculosis of Johns Hopkins Hospital. L. Hamman, Baltimore.
61 *The Home Factor in Tuberculosis. H. H. Hazen, Baltimore.
62 Early Diagnosis of Pulmonary Tuberculosis. L. Hamman and S. Wolman, Baltimore.
63 Crusade Against Tuberculosis. L. F. Flick, Baltimore.
64 The Tuberculosis Situation in Maryland. H. B. Jacobs, Baltimore.
65 Intestinal Obstruction. J. C. Bloodgood, Baltimore.
66 The Purple Island by Phenias Fletcher. A. G. Pohlman, Indianapolis, Ind.

45. **Vaccine Treatment of Gonorrheal Arthritis.**—Cole and Meakins consider gonorrheal arthritis a most suitable condition for treatment by vaccines, if Wright's opsonic theory and method are correct, because phagocytic or opsonic immunity may play a prominent part in the case of those infections due to the group of cocci to which the gonococcus belongs; because the present treatment of the condition is not very satisfactory, and because the arthritis is a local metastatic infection of prolonged cause situated in a position in which the blood supply is not very abundant, and in which, therefore, stimulation of the general mechanism of immunity is probably not very active. They describe the formation of the vaccine and report fifteen cases in which it was used. While they realize that many patients with gonorrheal arthritis recover completely under other forms of treatment, they are under the impression, on the whole, that the vaccine treatment has been of distinct value.

46. **Tuberculo-Opsonic Index.**—Jeans and Sellards, as the result of a study of nine cases (reported), consider a continuation the method of treatment justified. In regard to diagnosis, they have employed the opsonic method in a considerable number of cases without obtaining a satisfactory result, and further, the diagnostic method described by Wright, of heating the serum for the detection of immune opsonins, has also not proved of value in five cases in which they have tried it.

47. **Opsonins.**—Moss summarizes his conclusions as follows: 1. No high degree of opsonic immunity such as is possible in antitoxic and bactericidal immunity, can be produced in rabbits by ordinary inoculation procedures with *Staphylococcus aureus*. 2. None of the present methods of estimating the opsonic content of the blood seems sufficiently accurate to be of practical value. It seems important that further effort should be expended in finding a reliable technic for clinical purposes rather than in continuing to pile up statistics which are so inaccurate as to be misleading.

49. **Specificity of Opsonins.**—Russell, from experiments which have been repeated a number of times, draws the following conclusions: 1. Following injections of bacterial vaccines, the increase of opsonins is probably due to the formation of immune opsonins which react specifically. 2. In saturation experiments with normal sera we are dealing with normal or common opsonins, and these are not specific, since they can be removed by saturation with any one of a considerable number of bodies. 3. In saturation experiments with immune sera we have both the immune and the common opsonin present; the former is quite specific, while the latter is not. 4. *B. pyocyaneus* is susceptible to spontaneous phagocytosis.

61. **Home Factor in Tuberculosis.**—Hazen reports results of an examination instituted by the Phipps Dispensary, Baltimore, into the home life of tuberculosis patients. Eighty-three families were studied, with a total of 534 individuals. Results show that in 63 per cent. of their cases there was no tuberculosis in the immediate ancestors; 43 per cent. of those exposed to marital infection became infected, while only 38 per cent. of those exposed to parental infection developed the disease. Only three individuals of tuberculous stock developed lung trouble when not in association with their families. There were eleven well-marked instances of house infection. In view of these facts Hazen can not help believing that infection acquired by long continued and intimate association plays the only rôle in the transmission of pulmonary tuberculosis.

Cleveland Medical Journal.

August.

67 Summary of One Thousand Cases of Appendicitis, with Observations on Diagnosis. G. Crile, Cleveland.
68 *Case of Vaginal Cesarean Section. F. S. Clark, Cleveland.
69 Surgical Lesions of the Central Nervous System. C. H. Frazier, Philadelphia.
70 Criminal Abortion. R. H. Grube, Xenia, Ohio.

68. **Vaginal Cesarean Section.**—Clark reports a case of vaginal Cesarean section in the case of a primipara aged 26, with convulsions, and urine nearly solid with albumin at the seventh month. He summarizes the indications for vaginal Cesarean section as follows: 1. Certain cases of eclampsia when the cervix is not obliterated and is very rigid and unyielding. 2. Cases of heart disease under the same condition when rapid delivery is demanded. 3. All cases of separation of a nor-

mally implanted placenta. 4. It may be rarely indicated in placenta prævia when the hemorrhage is profuse and the cervix is not obliterated and is very rigid, a condition not frequent in placenta prævia. 5. In the above conditions it is preferable to abdominal section because, while it is nearly as quickly performed, it does not cause so much shock, is not so objectionable to friends of the patient, and is not so likely to result in rupture of the uterus in subsequent pregnancies.

Journal of the South Carolina Medical Association, Greenville.
July.

71 Responsibility of the Physician in Carcinoma of the Cervix and of the Breast. L. Guerry, Columbia, S. C.
72 Cancer of the Uterus—Our Responsibility to Woman. A. B. Knowlton, Columbia, S. C.
73 *Modification of Gilliam's Operation for Backward Displacement of the Uterus. L. Peters, Columbia, S. C.
74 Suprapubic Lithotomy or Cystotomy. D. M. Crosson, Leesville, S. C.

73. Modification of Gilliam's Operation.—Peters first gives the procedure of Gilliam's operation for backward displacements of the uterus as described in THE JOURNAL A. M. A., June 15, 1901, page 1692. He points out that the round ligaments are simply pulled over toward the middle line and drawn with their overlying peritoneum through a perforating wound in the fascia, near the incision, where they are secured by sutures, thus producing a pocket of peritoneum in which there is a chance that a knuckle of gut may become fixed and strangulated. The chances of hernia are also increased. He modifies Gilliam's operation as follows and reports satisfactory results in four cases: After the abdominal incision has been made the round ligament of one side is seized with tenaculum forceps one and one-half inches from the uterus and drawn up into the incision. The peritoneum over the round ligament is incised for from 0.5 to 1 cm. at the point where it is grasped by the tenaculum. The round ligament is then drawn into the abdominal cavity through this little incision in the peritoneum and a stout silk thread looped about the round ligament and clamped, but not tied. The other round ligament is similarly treated. Then one-half inch from the incision a curved artery forceps is made to pierce the aponeuroses and fasciæ obliquely outward, as described by Gilliam, but instead of perforating the peritoneum and thus entering the abdominal cavity an inch to an inch and a half from the incision, the point of the forceps is forced onward between the peritoneum and fascia until it is made to emerge into the abdominal cavity through the little opening in the peritoneum over the round ligament at the point where the silk was looped around it. The blades of the forceps are then separated and made to grasp both ends of silk thread which is looped over the round ligament; the forceps is withdrawn, bringing with it the thread, and traction on the thread brings with it a loop of round ligament without peritoneal covering. The loops of ligament are then secured and the operation is completed according to Gilliam's method.

Journal of Cutaneous Diseases, New York.
August.

75 *Two Cases of Raynaud's Disease with Ocular Symptoms. G. H. Fox, New York.
76 Results in Experimental Inoculation of Syphilis. C. M. Williams, New York.
77 Chancre of the Cheek Following a Bite. J. Kingsbury, New York.

75. Raynaud's Disease.—Fox reports two cases of Raynaud's disease, in both of which there was a sudden paroxysmal impairment of vision. Another point of interest in the first case was the involvement of so many lesions, including the fingers, toes, nose, ears, cheeks, chin, tip of tongue and nipples. The second case was also interesting on account of its complication with scleroderma, an association of diseases which has been made the subject of an inaugural thesis by Favier.

The Physician and Surgeon, Detroit.
March.

78 Infant Feeding. J. L. Morse, Boston.
79 Effect of Roentgen Rays on Blood-Forming Organs. A. S. Warthin, Ann Arbor.

Virginia Medical Semi-Monthly, Richmond.
July 12.

80 *Treatment of Extrauterine Pregnancy. A. P. Heineck, Chicago.
81 *Successful Treatment of Gallstones without Surgery. C. S. Webb, Bowling Green, Va.
82 Treatment of Coxitis. P. A. Mellhenny, New Orleans, La.
83 Is Eyestrain the General Prevailing Cause of Migraine? S. Harnsberger, Catlett, Va.
84 Principles of Surgery. (Continued.) S. McGuire, Richmond.
July 26.
85 *Pure Drugs. H. W. Wiley, Washington, D. C.
86 *Uterine Decidua as a Diagnostic Sign in Extrauterine Pregnancy. A. P. Condon, Omaha, Neb.
87 *Amenorrhea. R. R. Smith, Grand Rapids, Mich.
88 *Plea for Operative Cure of Hernia. G. P. LaRoque, Richmond, Va.
89 Diagnosis of Cardiac Disease. T. Ragan and S. L. White, Ruston, Iowa.
90 Principles of Surgery. (Continued.) S. McGuire, Richmond.

80.—Practically the same article appeared *in extenso* in *Surgery, Gynecology and Obstetrics*, February, 1907.

81.—The substance of this article was abstracted in THE JOURNAL, Nov. 17, 1906, page 1675, from Webb's original paper, as presented to the Medical Society of Virginia, Sept. 9, 1906.

85.—This article also appeared in the *Monthly Cyclopedia of Practical Medicine*, June, 1907.

86.—Abstracted in THE JOURNAL, June 8, 1907, page 1982.

87.—Abstracted in THE JOURNAL, July 13, 1907, page 180.

88. The Cure of Hernia.—LaRoque makes an earnest appeal to the general practitioner to take more interest in his hernia cases, with a view to having the patients submit to operation for radical cure. He lays stress on the decreased usefulness and earning capacity of the hernia subject and enumerates the dangers and inconveniences of the truss palliative method, and of injections, etc., into the sac, and then shows by statistics, especially those of Coley and DeGarmo, that under modern operative methods the mortality is practically almost *nil* and the radical cure positive.

The Laryngoscope, St. Louis.
June.

91 The Mouth of the Esophagus. G. Killian, Freiburg, Germany.
92 Loss of Voice in Singers. W. J. Henderson, New York City.
93 Advantages of Intranasal Route over Radical Operation in Treatment of Chronic Symptoms in Antrum of Highmore. R. C. Myles, New York.
94 *Tuberculosis of Accessory Sinuses of the Nose. J. W. Gleitsmann, New York.
95 Acoustics of the Mouth and Relation of the Individual's Voice to Hearing. D. R. Kyle, Philadelphia.
96 Subperiosteal Squamo-mastoid Abscess. S. Oppenheimer, New York.
97 Four Mastoid Cases. N. H. Pierce, Chicago.
98 Case of Foreign Body in the Larynx for Two Years. S. Rosenheim, Baltimore.
99 Case Reports—Epithelioma of Larynx; Sarcoma of Pharynx. C. F. Thelsen, Albany, N. Y.
100 Case of Otosclerosis. G. E. Shambaugh, Chicago.
101 Formidin in Affections of the Ear, Nose and Throat. O. J. Stein, Chicago.
102 Action of New Iodin Preparation in Nose and Throat Work. F. Menge, Chicago.
103 Instrumental Aids to Bronchoscopy and Esophagoscopy. C. Jackson, Pittsburg, Pa.

94.—Abstracted in THE JOURNAL, Aug. 3, 1907, page 419.

Journal of the Missouri State Medical Association, St. Louis.
July.

104 Tuberculosis a Communicable Disease. J. M. Allen.
105 Sanitation and Tuberculosis. G. Homan, St. Louis.
106 Early Diagnosis of Tuberculosis of the Lungs. L. M. Warfield, St. Louis.
107 Duty of the General Practitioner in Tuberculosis. W. S. Allee, Olean, Mo.
108 Consumption and Civilization. R. O. Cross, Kansas City, Mo.
109 Need of Local Organization in Fight Against Tuberculosis. F. Devilbiss, Eugene, Mo.
110 Civic Responsibilities. W. Porter, St. Louis.
111 Local Anesthesia. R. D. Blair, Clinton, Mo.
112 Acute Bronchitis During the Nursing Period. J. J. Eko, Kearney, Mo.

Detroit Medical Journal.
July.

113 Diagnosis and Treatment of Suppurative Kidney Lesions, with Special Reference to Pyelonephritis. F. W. Robbins, Detroit.
114 Office Treatment of the Commoner Rectal Diseases. L. J. Hirschman, Detroit.

Chicago Medical Recorder.
July.

115 Metabolism as Affected by Disorders of the Stomach and Intestines. R. W. Webster, Chicago.
116 Intravenous Therapy. W. F. Bernart, Chicago.
117 Epilepsy. G. C. Shockey, Chicago.
118 Fractures of the Sternum and Ribs. E. Friend, Chicago.
119 Treatment of Acute Rheumatic Fever. S. R. Pietrowicz, Chicago.

Journal of Nervous and Mental Diseases, New York.
July.

120 Unilateral Paralysis Agitans Occurring After Hemiplegia. J. Sailer, Philadelphia.

121 Study of Reflexes of the Lower Extremities in 60 Cases of Paresis. A. Gordon, Philadelphia.
122 Sensory and Motor Disturbances in Parts Above the Distribution Involved by Definite Organic Lesions of the Spinal Cord. T. H. Weisenburg, Philadelphia.
123 Korsakoff's Psychosis Superimposed on Melancholia. J. W. Stevens, Amityville, L. I.

Southern California Practitioner, Los Angeles.

July.

124 Hypertrophic Pyloric Stenosis in Infancy. W. A. Edwards, Los Angeles.
125 Pathology of Ptomain Poisoning. S. P. Black, Los Angeles.
126 Three Cases of Fatal Ptomain Poisoning. C. Sheppard, Ontario, Cal.
127 Fracture of the Forearm. F. M. Bruner, San Diego, Cal.
128 The Vision Splendid. N. P. Conrey, Los Angeles.
129 Medicine, Ancient and Modern. E. E. Major, Redlands, Cal.
130 Duty of the School Toward the Child at School. S. A. Knopf, New York.

Vermont Medical Monthly, Burlington.

July.

131 Etiology and Treatment of Epilepsy. A. Morton, St. Albans.
132 Trichinosis. C. H. Beecher, Burlington.

Western Medical Review, Omaha, Neb.

July.

133 Metabolism in Causation of Epilepsy. J. M. Aikin, Omaha.
134 Disease of the Maxillary Antrum and Secondary Infection of the Brain. P. H. Salter, Norfolk, Neb.
135 Present Tendencies in Obstetric and Gynecologic Practice. I. C. Philbrick, Lincoln, Neb.

New York State Journal of Medicine, Brooklyn.

July.

136 *Study of Blood Pressure. H. L. Elsner, Syracuse, N. Y.
137 *Classification of Blood Pressure Cases. L. F. Bishop, New York.
138 *Aural Inspections and Functional Tests in Healthy Individuals. W. S. Bryant, New York.
139 *Syphilitic Lesions of the Eyelids. F. J. Parker, New York.
140 The Physician as an Educator. S. A. Mereness, Oneonta, N. Y.
141 Personal Hygiene. F. D. Reese, Cortland, N. Y.
142 Local Anesthesia for Major and Minor Operations. M. B. Tinker, Ithaca, N. Y.
143 History of the Medical Society of the State of New York. (Continued.) J. J. Walsh, New York.
144 Relief of Symptomatic Disturbances During Pregnancy. S. H. Monell, New York.

136, 137.—Abstracted in THE JOURNAL, March 2, 1907, page 823.

138.—Abstracted in THE JOURNAL, Feb. 9, 1907, page 534.

139.—Abstracted in THE JOURNAL, Feb. 23, 1907, page 720.

Pennsylvania Medical Journal, Athens.

July.

145 *Relations of Thyroids and Parathyroids. A. J. Smith, Philadelphia.
146 *Roentgen Treatment of Tuberculous Glands. G. C. Johnston, Pittsburg.
147 Surgical Tuberculosis. G. W. Guthrie, Wilkes-Barre.
148 *Acute Stage of Bone Tuberculosis. H. A. Wilson, Philadelphia.
149 *Relation of the Cardiac Muscle and Valves to Arterial Tension. W. B. Stanton, Philadelphia.
150 Diagnosis of Brain Abscess. J. W. Boyce, Philadelphia.
151 Pathology and Treatment of Stricture of the Urethra. A. C. Wood, Philadelphia.

145.—Abstracted in THE JOURNAL, Oct. 6, 1906, page 1130.

146, 148.—Abstracted in THE JOURNAL, Oct. 13, 1906, page 1221.

149.—Abstracted in THE JOURNAL, Oct. 20, 1906, page 1323.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal, London.

August 3.

1 *Science in Its Application to National Health. H. Davy.
2 *Plea for Accuracy of Thought in Medicine. W. H. White.
3 *Contagion of Cancer in Human Beings. H. T. Butlin.
4 *Case of Acute Enteric Intussusception with Apparent Reduction by Irrigation. W. Templeton.
5 *Iodin and Typhoid. D. Walsh.

1, 2 and 3.—The papers were discussed editorially in THE JOURNAL, Aug. 10, 1907, p. 498.

4. **Enteric Intussusception.**—Templeton reports a case of acute enteric intussusception, in a boy 3 years of age, which disappeared completely three times after administration of an enema of warm water. The last time, when the boy was on the operating table, the invagination was easily reduced on operation. The patient recovered well and passed a distinctly fecal motion, but collapsed thirty-six hours later and died.

5. **Iodin in Typhoid.**—Walsh speaks highly from personal experience of administration of one minim of carbolic acid, and 2 minims of tincture of iodin in a tumbler of water, drank as the patient wished. Rapid cleaning of the tongue, lowering of temperature, and cessation of diarrhea followed in his experience.

The Lancet, London.

August 3.

6 Science in Its Application to National Health. H. Davy.
7 Plea for Accuracy of Thought in Medicine. W. H. White.
8 Contagion of Cancer in Human Beings. H. T. Butlin.
9 *Mobile Kidney with Description of Operation for Anterior Nephropexy. R. S. Bishop.
10 Study of Conditions Producing Anomalous Reaction Met with in Testing Urine for Sugar with Fehling's Solution. F. W. Pavy.
11 *Iodin as an Antidote in Carbolic Acid Poisoning. J. Maberly.
12 *Case of Addison's Disease in a Negress. R. Scheult.
13 Case of Tuberculous Cerebrospinal Meningitis. S. Hodgson.

9. **Movable Kidney.**—Bishop discusses with great completeness the subject of movable kidney, its importance, diagnosis and treatment. He has been unable to obtain satisfactory results with any appliances. With regard to the operation, having in view the preponderating occurrence of the condition on the right side, he considers that to attack the organ from the front, instead of by the extraperitoneal route, best fulfills the following requirements: The requisite support to the kidney, in the most effective direction, namely, the lower part; closure of the opening to the postperitoneal cavity, formed by the kidney itself; certain replacement of wandering kidney accurately in its original site, without dragging of vessels or kinking of ureter; support given as is most needed in upright position; no introduction of foreign material as a nucleus for calculi into substance of kidney and no dependence on friable tissues for the sutures. A new *point d'appui* for the fibers continued into the posterior longitudinal band is also an advantage, preventing return by removal of the old drag on the kidney.

Bishop uses Morison's cholecystotomy incision, an obliquely transverse one, through the muscles of the abdominal wall outside the rectus, from a point corresponding to the chondral tip of the tenth rib backward to one midway between the sternum and spine, one inch below the border of the rib. Admirable access is thus gained to the renal fossa. The liver being lifted, the stomach drawn inward, and the hepatic flexure of the colon depressed by broad retractors or flat sponges, the kidney and usually the renal veins are visible and palpable beneath the posterior peritoneum. In the displaced condition of the kidney, these veins are seen through the semitransparent peritoneum, lying obliquely with their renal extremities much lower than the spinal. On pushing up the kidney they glide upward and become transverse, forming a guide both to the correct position of the kidney, in which it should be fixed, and to the point of entrance of the first fixating suture. The parietal peritoneum being divided transversely over the lower fourth of the kidney, and the peritoneal edges held apart, a curved incision with the concavity upward and outward is made in the proper capsule, and the lower segment of the capsule loosened from the anterior renal surface, to a thinner and lower extremity, the capsule remaining attached to the posterior surface of the organ. The flap turned downward and inward leaves the raw surface of the kidney exposed for a corresponding distance; two or three sutures attach this loosened edge of the capsule to the fascia beneath, and the peritoneum is again sewed up with catgut. The anterior surface of the lower leaflet of the true capsule is now in contact with the posterior abdominal wall, the posterior surface of the peritoneum lying on it, and on the bared lower anterior renal tissue. The correct position of the kidney being now accurately determined, it is held there by the three outer fingers of the left hand, while the left forefinger is placed on the inner side immediately below the ureteric insertion. A long straight needle, armed with iodized or chromicized catgut, is pushed directly backward at this point until its point emerges behind, and another needle carrying the opposite end of the same thread in like manner 1 cm. below the first; the thread is then tied over the muscular layer behind the peritoneum; the capsule and posterior tissues are united on the inner side of the lower pole of the kidney. Another pair of

needles are placed in a similar manner so as to carry a loop of catgut below the inner lower angle; two or three more pairs carry loops below the kidney, and if deemed necessary, around the lower and outer side of the organ. All these pass through the peritoneum, capsule, subperitoneal connective tissues and muscles. When they are drawn tight and tied it will be seen that the kidney is supported by a row of sutures which do not penetrate its substance, but effectually fix it and close the cavity beneath it, while the union of the capsule and peritoneum has formed a somewhat stronger Toldt's fascia than normally exists on the opposite side. Any communicating fibers between the kidneys and the colon are pinned down to the posterior abdominal wall, to which henceforth any downward pull is transferred. The skin may then be divided behind between the protruding needle points, and this incision carried down to the muscular layer over which each suture is tied; or preferably, a curvilinear incision may first be made in the line which would be produced by the protruding points. If this is done, it greatly facilitates the passage of the needles, and in later operations Bishop has always done this; in any case, the penetrating sutures are tied and buried by a catgut suture through the skin and subcutaneous tissues. The closure of the abdominal wall in tier fashion completes the operation.

The passage of the fixating loops through the fibrous capsule renders fixation more solid and complete. Bishop has performed this operation nine times since February, 1906, with no mortality and no relapse, save in the first case in which the fixating needles were passed only through the peritoneum.

11. **Iodin for Carbolic Poisoning.**—Maberly reports three cases in which he administered successfully tincture of iodin internally, as an antidote when carbolic acid had been swallowed. In the case of an adult, a small teaspoonful of the tincture in a teaspoonful of water was drunk slowly. In two young children five drops of tincture in a teaspoonful of water were given and repeated at four-hour intervals. Relief to dysphagia and dyspnea was prompt, and a speedy cure followed. Experiment leads the author to the conclusion that iodin and phenol in equal quantities neutralize each other.

12. **Addison's Disease in Negress.**—Scheult of Trinidad reports the case of a negress, 55 years of age, in whom the intense and increasing blackness of the face and backs of the hands and fingers, and other irregularly defined areas of pigmentation on the skin and mucous membranes, led with other symptoms to a diagnosis of Addison's disease, which was confirmed at autopsy. This is only the second case of Addison's disease that has been recorded in the colony.

The Clinical Journal, London.

July 18.

14 Mucomembranous Colitis. R. Hutchison.
15 Mechanical Appliances in Surgical Treatment. J. Poland.

July 17.

16 Salivary Calculi. C. B. Lockwood.
17 Malignant Disease of the Mediastinum. C. Bolton.

July 24.

18 Abdominal Catastrophes. W. Turner.
19 Management and Treatment of Infantile Eczema. J. M. H. Macleod.

July 31.

20 Intrathoracic Aneurisms and Tumors. F. Taylor.

Medical Press and Circular, London.

June 26.

21 Disorders of Micturition in Women. P. Horrocks.
22 *Value of Widal Reaction in Diagnosis of Typhoid. W. J. Wilson.
23 Conservative Surgery in Abdominal Operations. C. B. Keetley.

July 3.

24 Organic Consequences of High Blood Pressure. L. Williams.
25 Treatment of Typhoid. E. Stadelmann.
26 *Rhinorrhea in Faucial Diphtheria. J. B. Rolleston.
27 *Uremia. A. E. Russell.

July 10.

28 Intra-Abdominal Adhesions. E. P. Paton.
29 The General Practitioner—His Outlook. J. L. Taylor.
30 *Diagnosis and Treatment of Fractures of Shaft of Femur. T. Myles.

July 17.

31 Treatment of Carcinoma of the Great Intestine. S. Pringle.
32 The General Practitioner —His Claim to Recognition. J. L. Taylor.
33 Friedreich's Ataxia and Syphilis. G. Pernet.
34 Choice of Gelatins for Bacterial Culture Media. T. T. Baker.
35 Cancer and Its Treatment. J. A. Shaw-Mackenzie.

July 24.

36 Disorders of Sleep. P. Stewart.
37 The General Practitioner—His Practical Needs. J. L. Taylor.
38 Poor Law and Sanitary Administration in Ireland. C. A. Cameron.

July 31.

39 *Value and Fate of Belated Ovaries. J. Bland-Sutton.
40 Headaches and Their Causes. F. Pineles.
41 *Improvements in Notification of Diseases. J. C. McWalter.
42 Anti-putrescent Medication by Specially Selected Lactic Organisms. M. Dufour.

22. **Widal Reaction.**—Wilson analyzes 230 cases of the Widal test, with a view to establishing its trustworthiness. One hundred and twelve were positive, 118 negative. Taking the Widal test to indicate that the patient either was suffering or had suffered from typhoid, this was indicated in 109 of the 112 cases, giving a positive reaction, the laboratory diagnosis corresponding with the clinical course of the disease in 97.3 per cent. Of the 118 negative results, 108 patients had not had typhoid, while 10 had previously had it. This gives a percentage for correctness of 91.5. Wilson has also examined the blood in 20 cases of cerebrospinal fever, with reference to its action on the typhoid bacillus in dilutions of 1 to 50, and upward. Reaction was negative in 15, positive in 5 cases.

26. **Rhinorrhea in Faucial Diphtheria.**—Rolleston summarizes his article as follows: 1. A large percentage of all patients with faucial diphtheria admitted to hospital have a history of rhinorrhea. 2. In a certain number of cases, which clinically are purely faucial, rhinorrhea is an early symptom, subsequently disappearing without treatment. 3. The frequency of this early and transitory rhinorrhea bears a direct relation to the mildness and an inverse relation to the severity of the faucial attack. 4. Faucial cases which are also clinically nasal are more severe than those which are clinically faucial only. 5. Faucial cases which are also clinically nasal as a rule develop the nasal discharge at a later date than those which are clinically faucial only. 6. Early and transitory rhinorrhea is relatively more common in laryngeal cases than in those that are purely faucial.

27. **Uremia.**—Russell reconsiders the old and abandoned hypothesis of Traube in the light of recent experimental and clinical work on conditions of increased intracranial tension with their associated alterations of blood pressure. He arrives at the conclusion that there is evidence to show that the cerebral manifestations of uremia are dependent on cerebral anemia, produced by an increase in intracranial tension resulting from cerebral edema. This view lends support also to the theory that epilepsy is produced by sudden cerebral anemia, since the convulsions of anemia and of idiopathic epilepsy may be absolutely indistinguishable. The practical application drawn from the above is that lumbar puncture should be performed in cases of uremia, whether coma, convulsions, or merely severe headache be the predominant feature. The presence of high blood pressure would be helpful as indicating the advisability of lumbar puncture.

30. **Fractures of the Shaft of the Femur.**—Myles finds the following constant factors: Invariable shortening due to overlapping. Invariable displacement of lower fragment. Invariable rotation of lower fragment, which is never in perfect alignment and can not be so. It is absolutely impossible to decide by the unaided eye, touch or measurements what the actual displacement of the fragment is. The author considers the three methods, simple wiring, the Park Hill method, and the use of screws, and concludes with the following advice applicable whichever method be used: 1. Find out as much as possible regarding the exact condition of the broken bone at the seat of the fracture by a series of *x*-ray photographs. 2. Think out very carefully beforehand which method is likely to give the best result. 3. Drill the bone with a Morse drill set in a brace. 4. If using the Park Hill screws see that the tap for cutting the screw thread in the bone is of exactly the same size as the screw to be inserted later, and is but little larger than the Morse drill. 5. Never try to hurry the tap, let it cut its own way into the bone. 6. When the ends of the fragment are exposed, measure their diameters and mark the screws at a point from their buried ends, exactly equal to this depth, so that they may not project through the bone

and perhaps injure the vessels. 7. If using the Park Hill method, remember that the wooden faces of the clamps taken from the boiler wet will shrink as they dry, and the screws holding them in position must be tightened in an hour or so. 8. Take an *x*-ray photograph the next day from two points 90 degrees apart to insure that the position is maintained. 9. Remember that to pass a ligature around the bones, a very large and powerful needle must be used, as the tough tissues about the linea aspera offer a considerable obstacle to the passage of the needle. Lastly, practice the operation on a cadaver before trying it on the living subject.

39. **Belated Ovaries.**—By this term, Bland-Sutton means ovarian tissue left behind after the removal of the uterus, etc. [This expression does not strike us as felicitous, inasmuch as in common parlance "belated" implies rather lateness in arrival, not merely an overstaying. Would not residual or residuary more aptly express what is meant?—ED.] Bland-Sutton in 1897 reversed Tait's procedure in the case of fibroid, by removing the uterus and leaving at least one ovary, a procedure which, while violently opposed at first, has now become common. His further experience confirms the value of this procedure, particularly in the case of women under 40 as being of service in securing freedom from flushing, promoting domestic happiness and conserving nubility notwithstanding sterility.

41. **Notification of Diseases.**—McWalter asks if it is worth while to have the vast machinery of notification only to hear of a few cases of typhoid or scalatina or diphtheria. He suggests that the notification system be extended to diseases of every class so that all diseases should be reported to the sanitary authorities at regular intervals, but that the individual names be not disclosed except in those cases in which they are already required. This would give a far better picture of the state of public health and lessen the public mistrust of notification, when confined solely to communicable diseases.

Annales de l'Institut Pasteur, Paris.

43 (XXI, No. 5, pp. 321-399.) Trypanosomiases of the Upper Niger. (Tryp. du Haut-Niger.) A. Laveran.
44 Trypanosomiases in Animals in French Guinea. (Trypanosomiases animales de la Guinée française.) G. Martin.
45 Mechanism of Antianaphylaxis. (Mécanisme de l'anti-anaphylaxie.) S. Besredka and E. Steinhardt.
46 Human Myiasis Caused by *Oestrus ovis L.* ("Thim'ni" d'Algérie.) E. Sergent.

Annales d. Mal. d. Org. Gén.-Urin., Paris.

47 (XXV, No. 1, pp. 1-79.) Study of Phenomena Consequent on Downward Displacement of the Right Kidney to the Third Degree. (Accidents provoqués par l'abaissement du rein.) P. Algiave.
48 Unusual Hematuric Kidney Affection. (Aff. rénale hém.) D. Taddei.
49 (No. 2, pp. 80-160.) Gonorrheal Joint Affections. (Le rhumatisme blennorrhagique et son traitement.) A. Robin.
50 Cocainized Oil as Lubricant for Urethra. (L'huile cocainée chez les urinaries.) R. Bonneau.
51 Three Cases of Bladder Tumors without Hematuria. (Tumeurs de la vessie.) B. Guizy.
52 (No. 3, pp. 161-240.) Epithelial Cancers of the Prostate. (Canc. epith. de la prostate.) B. Motz and F. Majewski.

Presse Médicale, Paris.

53 (XV, Nos. 44-47, pp. 353-384.) *Normal Resistance of Blood Corpuscles to Hemolysis. (Résistance globulaire normale.) Chauffard and H. Rendu.
54 Incarcerated Hernia in Infants. (Engouement hennaire chez le nourrisson.) A. Broca.
55 Massage and Ionization in Joint Affections. (Massage et ionisation dans les affections articulaires.) Durey.
56 Gymnastics of the Scapula. (Gymn. de l'omoplate.) P. Desfosses.
57 *Simple Treatment of Certain Dermatoses and Disfigurements of the Face. (Traitement simple de certaines dermatoses, etc.) L. Jacquet.
58 Radioscopic Diagnosis of Dilatation of the Stomach. Radioscopie gastrique.) G. Leven and G. Barret.
59 Intermittent Form of Pneumonia. (Pneumonie à forme intermittent.) A. Martinet.
60 So-called Syphilitic Stricture of the Rectum. (Rétrécissement dit Syph.) E. Schwartz.
61 Rôle of Infection in Severe Anemias.) (Rôle de l'inf. dans les anémies graves). L. R. Dumas and Poisot.

53. **Normal Standard of Resistance of Blood Corpuscles.**—The importance that has been acquired by the hemolytic blood test renders indispensable some normal standard of the resisting powers of normal blood corpuscles, Chauffard and Rendu propose to use as a standard test solution of physiologic salt solution, containing 7 parts per 1,000 NaCl. They give a table showing the figures corresponding to thirty-one test tubes, the first containing 68 drops of physiologic salt solution, the second 66, the third 64, and so on down to 8 drops. Addition of blood to these tubes in turn shows the point at which the corpuscles begin to be dissolved, the fluid in the tube turning pink. The resistance is estimated by the number of drops of salt solution in the tube in which this is observed. They give examples of the findings from a number of cases of various affections. In some the hemolysis occurred abruptly in one or two tubes, in others it showed a more indistinct and gradual course. The average for slight hemolysis was tube 42; for distinct hemolysis, tube 38, and for pronounced hemolysis, tube 12, that is, the tubes containing these numbers of drops.

57. **Treatment of Dermatoses and Cutaneous Disfigurements of the Face.**—Jacquet describes the mechanism by which—through the intermediation of the vagus and sympathetic—irritation is transmitted from the stomach to the nerves of the face. He believes that the face is the reflection of the stomach far more than the tongue. Irritation from the stomach, he asserts, affects the trigeminal and first cervical nerves and they in turn act on the tissues, distending the vessels, heating and making the face shiny from the hyperfunction of the over-stimulated glands. In time, this more or less constant irritation and hyperfunctioning leads to exhaustion of the glands and tissues. There is no need, he declares, to invoke the work of bacteria or toxins, the hyperirritation from the stomach alone being sufficient to explain the greasy, pimply, thickened aspect of the skin. He ascribes the whole trouble to irritation of the stomach mucosa from defectively chewed and more or less hastily swallowed food, citing several examples from his experience in which the patients confessed to bolting their food. He usually puts his patients on a fractioned milk diet as the best means to spare the stomach mucosa and to break up the habit of rapid eating. When this is accomplished—and not before—he massages the face, taking up the tissues through the entire skin and squeezing them between his fingers for several minutes. He then kneads the skin alone, proceeding systematically from the center to the periphery, the whole, a gradual mechanical excitation, commencing gently and increasing the force until, at the end of a week or two he is applying his entire strength. With these simple measures he states that the dyspeptic disturbances are banished and the face is rejuvenated.

Archiv f. klinische Chirurgie, Berlin.

62 (LXXXII, No. 4, pp. 955-1213.) *Importance of Abnormal Renal Vessels in Origin of Hydronephrosis. (Entstehung Hydronephrose.) G. Ekehorn.
63 *Forty-one Prostatectomies. (Exstirpation der Prostata.) H. Kümmell.
64 Lipomatosis of Bladder with Non-Traumatic Rupture. (Lipomatosis der Harnblase.) G. Hedren.
65 Incarceration of a Duodeno-jejunal Hernia in Connection with a Meckel's Diverticulum. (Einklemmung einer Hernia, etc.) Borchard.
66 Removable Suture for Radical Operation for Inguinal Hernia. (Neue Nahtmethode.) E. Martini.
67 *Total Extirpation of Bladder with Bilateral Ureterostomy. (Total Exstirpation der Harnblase, etc.) T. Rovsing.
68 *Retention of Food in Stomach Twelve Hours After a Test Meal Always an Indication for a Laparotomy. (Magenretention und deren Bedeutung.) E. Nyrop.
69 *Surgery of the Lungs. (Chirurgie der Lungen.) P. L. Friedrich.
70 *Favorable Influence of Preliminary Saline Infusion on Chloroform Anesthesia. (Einfluss der Kochsalzinfusionen auf die Chloroformwirkung.) L. Burkhardt.
71 *New Technic for Gastroenterostomy. (Neue Methode der Gastroenterostomie.) A. N. Simin.
72 Combined Drill and Plane Trephine. (Stoll's Rhychanotrepan.) S. N. Delitzin.
73 Pneumotomies in Russia. (Pneumotomien in Russland.) A. A. Opokin.

62. **Hydronephrosis Caused by Anomalies in the Kidney Vessels.**—Ekehorn's patient had suffered for six years from recurring right kidney colic, which had grown more frequent and intense since the last pregnancy. The only possible cause that could be discovered was an accessory artery, entering about the center of the lower half of the kidney. The ureter had to turn back on itself to pass over this artery. All disturbances ceased when the artery was severed. He reviews twenty-four somewhat similar cases from the literature, showing that anomalies in the kidney vessels are not rare, and that they are liable to cause trouble, especially if the kidney becomes even slightly displaced. The attacks of pain in his case had

always been relieved by pressure on the abdomen, which probably acted by pushing up the kidney and thus straightening the ureter to some degree. A resistant tumor was palpated in the right kidney region, giving the impression of an enlarged, sensitive kidney, somewhat lower than normal. The bladder was normal and the urine from the left kidney was physiologic, while the right urine was very thin but aseptic, containing no formed elements except epithelium from the renal pelvis. There was no pus or fever. The proportion of sodium chlorid was 4.5 per thousand and of urea, 5 per thousand. The tumor proved to be the swollen and tender kidney, but the pathologic conditions were not too far advanced for apparently complete restitution.

63. Prostatectomy.—Kümmel's experience indicates that cancerous degeneration of the prostate is of more frequent occurrence than is generally supposed, and that removal of the prostate in these and other cases may prove permanently successful. The dangers of prostatectomy by the perineal or bladder route are about equal, he says. If the prostate protrudes deep into the rectum and the abdomen is corpulent, the perineal route should be preferred, but if the prostate protrudes more into the bladder, the transvesical route is best. Cystoscopy generally decides the question. The technic of suprapubic prostatectomy is simpler and easier, the time required for healing is shorter, and there is less danger of incontinence and of fistula formation. Age is not a contraindication to prostatectomy, but advanced arteriosclerosis, diffuse bronchitis, insufficiency of the kidneys which it is impossible to remedy, and entire loss of the contracting power of the bladder, as well as severe impairment of the general health, should contraindicate such an extensive operation except on suspicion of cancer. Chronic, incomplete and complete retention of urine should be treated first by the permanent catheter in case introduction is easy and there are no complications. If this does not answer the purpose, and if the patient is compelled to use the catheter constantly, operative treatment should be advised.

67. Total Extirpation of Bladder.—Rovsing discusses the various methods of after-treatment when the bladder has been removed, dwelling on the inconveniences of each, and then describes a technic which has proved entirely satisfactory in three cases in which it has been applied. He removes the bladder unopened, as a cystic tumor is shelled out. His incision is in the shape of an arc, with the convexity down. The adherent peritoneum is removed with the bladder if it can not be readily detached. The ureters are divided with the cautery, between two ligatures, about 1 cm. above. In women the neck of the bladder is then loosened and 1 or 2 cm. of the urethra. The latter is then seized in a small angiotribe and severed back of it. In males the prostate and bladder must be loosened from the rectum before the urethra can be reached and divided above, a small forceps applied below. The entire bladder can thus be removed without hemorrhage. The peritoneum is sutured together again if it had to be opened. The cavity left by removal of the bladder is lined with a gauze veil and filled with strips of gauze brought out through the center of the wound. He moistens the gauze with a 1 or 2 per cent. solution of silver nitrate. A short incision is then made in the lumbar region on each side, extending from the margin of the erector spinæ outward. The ureter is then hooked up with the forefinger, close to the kidney, the lower part is cautiously loosened, and the whole brought out. In this way the ureters are brought out through the small incision about 8 cm. from the median line. Funnel-shaped retraction is liable to occur if the ureter is fastened directly to the skin. For this reason he does not fasten the ureter, but leaves it hanging from the wound, at symmetrical points on each side, enclosed in a glass vessel, after introducing a No. 12 rubber catheter in such a way that it just passes through the abdominal wall. The projecting part of the ureter is protected with a perforated rubber cot. The outer end of the exposed portion dries up and shrivels for 2 or 3 cm. By the end of a week, when the sutured wound has entirely healed, the necrotic end of the ureter is cut off while the living part above is left to project like a small beak-shaped urethra, standing out above the skin. It soon becomes coated on the outside with epidermis. After this the catheter is removed and the flow of urine is controlled with an ingenious apparatus of which an illustrated description is given. It consists of an elastic belt. Two silver plates are sewn in the belt in the lumbar regions. Each plate has a round hole in the center in which fits a shallow silver cup with rubber on the edge, the cup extending below into a short tube connected by a rubber tube with the urinal below. Bands at the side of the belt pass under the thighs, and the belt buckles in front and laces behind. The rubber bag serving as the urinal is suspended just below the pubic bone. The silver cups are inserted from within the belt, and the pressure of the latter holds them tight against the skin. A woman of 34 has been wearing this belt for eleven months, day and night, and it has worked to perfection, with no leakage of urine. The advantages of the technic described are claimed to be that the bladder can be removed without danger of infiltration of urine or contamination with feces, and there is no danger of secondary infection which is almost inevitable, he declares, when the ureters are implanted in the intestine or vagina.

68. Clinical Importance of Retention of Food in the Stomach.—Nyrop is assistant in Schou's surgical service at Copenhagen. He reviews the evidence on record in regard to operative treatment of stomach affections. He has collected 156 cases in which laparotomy was done for gastric affections, about equally divided between malignant and non-malignant. He classifies and studies these from various points of view. All conclusions point, he affirms, to the supreme importance of retention for diagnosis and differentiation. Retention may be the result of a malignant or harmless affection, and it may be of functional or organic origin, and in the latter case may be the result of some obstacle to the evacuation of the stomach or to weakness of the stomach musculature. But whatever the cause, it indicates operative treatment. He pleads for tests for retention in every stomach and intestinal affection, from the mildest to the severest, without exception, as also in all abdominal affections accompanied by gastric symptoms. The test recommended is the Bourget test meal, consisting of eight or ten stewed prunes, meat and bread. Nothing is eaten after this meal, taken at 7 p. m., and the next morning, about 7 a. m., the contents of the stomach are withdrawn and the stomach is rinsed out. The findings in 202 cases are tabulated, with the diagnosis and course. The results show that the discovery of remains of meat and prunes in the stomach, twelve hours after their ingestion, is always a sign of some notable disturbance in the functioning of the stomach, and that this discovery indicates laparotomy. In 75 of the 202 patients examined the rinsing fluid was always free from remains of the test meal, and although there were marked evidences of a gastric affection in these cases, yet the absence of retention showed the spasmodic character of the trouble, and its subsidence during sleep, or else that the stomach was able to overcome the obstacle during repose. In some cases it is better to make the test in the morning, giving the test meal at 8 a. m. and examining the stomach contents at 8 p. m. He expatiates on the terrible responsibility of the general practitioner who wastes time on internal measures while waiting for a palpable tumor. Many cases are cited from personal experience and the literature as examples proving the necessity for the rule: "Retention, no matter how slight, twelve hours after a Bourget test meal, is always an indication for laparotomy." It is comparatively immaterial, he asserts, whether the underlying trouble is malignant or not.

69. Surgery of the Lungs.—Friedrich's article was delivered as an address at the last German Surgical Congress. Several new instruments are described and illustrated, and the present status of operative treatment of pulmonary affections is reviewed. The benefits of the pneumatic cabinet for varying the atmospheric pressure are emphasized as of invaluable assistance in surgery of the lungs. Any one who wishes to undertake lung surgery, Friedrich states, should first familiarize himself with the over-pressure and under-pressure technic and have extensive personal experience with operations on animals before attempting to operate on the human lung.

70. **Injection of Saline Solution Before Administration of Chloroform.**—Burkhardt states that the injection of saline solution before administration has a favorable influence in reducing the toxic action of the chloroform. He considers that this is the effect of the dilution of the blood by the salt solution, the coefficient of the absorption being reduced while the blood pressure is kept high; at the same time the vagus remains more sensitive to stimuli. By this preliminary dilution of the blood, he claims, the organism can tolerate much larger amounts of chloroform without signs of intoxication. The infusion must be given just before the operation and must be as abundant as possible. Besides the lesser reduction of the blood pressure, he asserts that the rapid recovery after the anesthesia is especially striking. Owing to the lesser absorption of the chloroform, a larger proportion is eliminated by the lungs. The disagreeable by-effects, vomiting, headache, etc., are slight or entirely absent. These favorable effects of preliminary infusion of salt solution were so unmistakable in his experiments on animals that the method was introduced into the clinic at once. Each patient about to undergo a major operation received an infusion of from 1,500 to 2,000 c.c. from a quarter to a half an hour beforehand. The results were satisfactory. No by-effects from the infusion were observed. The patients all presented the same phenomena as the animals experimented on, namely, lessened tendency to lower blood pressure and the rapid recovery after the anesthesia. It was remarkable to observe the good pulse, even after prolonged general anesthesia, and the absence of headache, vomiting, or nausea. These preliminary infusions seem to be indicated most for patients with dubious heart and kidney action and in case of much debility and low hemoglobin percentage. In extensive operations on the urinary passages, he states that the infusion gives a certain feeling of security in regard to avoidance of the dangers inherent in protracted chloroform anesthesia. Infusion after the operation seems to have little effect in mitigating the toxic action of the chloroform.

71. **New Method of Gastroenterostomy.**—Simin takes up a slanting fold in the anterior aspect of the stomach, and incises the edge, pulling it out lengthwise and down as far as possible. He then sutures the upper half of the fold, the result being a tube-like projection from the lower part of the anterior aspect of the stomach, the end flaring, the whole, with the greater curvature of the stomach, resembling a narrow-necked pitcher nearly upside down. His description is illustrated as he has performed the operation on dogs, without any clinical experience to date. The technic and results proved excellent in his experiments.

Deutsche Zeitschrift f. Chirurgie, Leipsic.

74 (LXXXVII, Nos. 4-6, pp. 313-572.) *Extensive Resection of Small Intestine. (Zulässigkeit ausgedehnter Dünndarmresektionen.) Storp.
75 *Operations on Stomach for Non-Malignant Stenosis. (Magenop. bei benignen Leiden.) E. Nyrop.
76 Successful Technic for Operating in Case of Double Harelip with Snout-Like Protusion of Premaxillary Bone. (Hasenscharte.) H. Lorenz.
77 Nature of Inflammation. (Wesen der Entzündung.) E. Joseph.
78 *Gastric Ulcer Perforating into Open Abdominal Cavity. (Akut in die freie Bauchhöhle perf. Magengeschwür.) Federmann.
79 *Disinfection with Iodin and Benzin. (Jod-Benzin-Desinf.) Heusner.
80 Anomalies in Urachus. (Urachusanomalien.) M. Draudt.
81 *Chronic Interstitial Pancreatitis. (Pankreatitis.) A. Martina.
82 Retrograde Intestinal Incarceration. (Retrograde Incarc. des Darmes.) A. Jäckh.
83 Two Cases of Injury of Thoracic Duct. (Ductus thor.) A. Bohne.
84 Two Cases of Kidney Tumors in Children. (Nierentumoren.) F. Mekus.
85 Operative Technic for Retrobulbar Tumors. (Retrobulbare Tumoren.) Tavel.
86 Retrorectal Epigastric Hernia and Other Internal Hernias. (Innere Bauchbrüche.) M. v. Arx.

74. **Extensive Resection of Small Intestine.**—Storp gives the details in tabulated form of 22 cases in which from 192 to 520 cm. of the small intestine were resected for various reasons. The patients did not seem to be incommoded by the loss of such a stretch of intestine, and all were in good health at last accounts, except for a tendency to diarrhea in a few cases and the death of one patient three weeks after removal of cancer with metastases. In a personal case described, on account of sarcoma of the root of the mesentery, he removed the entire ileum and part of the jejunum, a total resection of 510 cm. or 17 feet of the small intestine. The stumps were united by a primary circular suture, and the patient gained 12 pounds in three months, with normal stools, but the malignant disease recurred after five months and the patient, a blacksmith of 21, was dismissed as incurable. No metastases were detected at the primary operation. The good functional results in all these cases justify, he asserts, resection of two-thirds or even more of the small intestine at need, and resection far into sound tissue.

75. **Operative Treatment for Non-Malignant Affections of the Stomach with Stenosis.**—Nyrop relates the experiences at Copenhagen with operative treatment of 56 cases of non-malignant affections of the stomach. The mortality was 3.7 per cent., and he ascribes the fact that any of the patients died to the waste of time on internal measures before the case was referred to the surgeon. He discusses methods of improving the record for gastroenterostomy and the indications for jejunostomy in case of non-malignant gastric affections, citing the opinions of various surgeons and gastrointestinal authorities. He advocates resection for chronic ulcers and early intervention, regarding the slightest retention twelve hours after a copious meal as an indication therefor. He adds that the best "early operation" for cancer of the stomach is the removal of a chronic ulcer before it has had time to turn into a cancer.

78. **Sixteen Cases of Perforating Gastric Ulcer.**—Federmann states that 11 of the 16 patients with acute perforation of gastric ulcer were operated on; the others were moribund when received. Of the 11 patients operated on, only 4 were saved, and in these the operation had followed the perforation in the first 12, 24 or 48 hours. The patients who recovered were all men, the sexes being about equally divided in the total cases. Gastric disturbances had been noted from childhood in all, and in three there had been recent severe trouble in the stomach. Intense initial pain in the upper abdomen is the most constant symptom of perforation, the entire abdomen becoming more or less tender, special pain on pressure in the flanks and pouch of Douglas. The abdominal wall becomes rigid at once, and persists thus from 12 to 24 hours, when the abdomen becomes distended. Initial vomiting is sometimes observed and the areas of dulness may simulate appendicitis. Temperature and pulse were normal during the first 12 to 24 hours, but hyperleucocytosis of from 16,000 to 28,000 during the first 24 hours was frequently observed. All the patients with leucocytosis under 15,000 succumbed. The outcome was decidedly more favorable in the cases in which no attempt at irrigation was made.

79. **Iodin-Benzin Disinfection.**—Heusner reiterates his recommendation of a mixture of iodin and benzin as superior to all other measures for disinfection of the hands. He adds 10 gm. of tincture of iodin to 750 gm. of benzin and 250 gm. of paraffin oil. The mixture is no more inflammatory than the same amount of ether or alcohol. He pours half a pint into a porcelain dish and scrubs his hands with it, and uses the same amount with a sponge to disinfect the field of operation. The mixture does not irritate the hands, the only drawback being a slight discoloration, which soon vanishes. It compels the surgeon to wash his hands thoroughly after the operation, and is an index of the penetrating power of the iodin. He states that no washing is required before the operation, and this statement is enough to condemn the technic in the mind of any thinking surgeon.

81. **Chronic Interstitial Pancreatitis.**—Martina reports the cure of a patient with chronic interstitial pancreatitis clinically cured by an operation which merely incised the adherent peritoneum for a distance of 10 cm. over the enlarged pancreas. An iodoform wick was inserted for drainage and the abdomen sutured. The patient was a woman of 33 who for four years had presented symptoms suggesting possible pancreatitis. After the operation she gained rapidly in weight; the pancreas can no longer be palpated, and now, nearly three years since the operation, the woman seems to be in perfect health. Martina is convinced that this form of pancreatitis is more common than malignant disease in the organ. The prognosis is

better, he says, with hypertrophy of the pancreas, except in case of multiple small cysts.

Münchener medizinische Wochenschrift.

87 (LIV, No. 23, pp. 1113-1160.) Preparation of Formaldehyd for Disinfection of Apartments. (Autan, ein neues Raumdesinfektionsmittel.) H. Hammerl.

88 *Erosions in Stomach Mucosa. (Magenerosionen.) C. Berger.

89 Sensitiveness of Testicle to Pressure a Sign of Stone in Kidney. (Druckschmerzhaftigkeit des Hodens bei Nierensteine.) A. Bittorf.

90 Affections of Trachea and Bronchi Diagnosed by Bronchoscopy. (Tracheo-Bronchoskopie.) M. Mann.

91 Mechanism of Hand-Walking in Acute Spinal Paralysis. Handgang infolge spinaler Kinderlähmung.) O. Kalb.

92 Variations in Structure of Normal Endometrium and in Chronic Endometritis. (Bau des Endometrium.) A. Theilhaber.

93 Diagnostic Value of Agglutination Test in Insurance Business. (Diagn. Wert der Gruber-Widalschen Reaktion bei Prüfung der Versorgungsansprüchen.) Knauth.

94 Acute Poisoning with Citrophen. (Citrophenvergiftung.) A. Goldschmidt.

95 Simple Apparatus for Testing Viscosity of Blood. (Blutviskosimeter.) Determann.

96 Influence of Cholin and of Roentgen Rays on Course of Pregnancy. (Einfluss des Cholins, etc.) F. Neumann and O. O. Fellner.

97 *Abdominal Arteriosclerosis and Allied Conditions. (Angina abdominis.) P. Perutz. Commenced in No. 22.

98 Study of Reflex Vestibular and Optic Movements of the Eyes and Their Importance for Trooical Diagnosis of Paralysis of the Eye Muscles. (Reflekt. Augenbewegungen und Augenmuskellähmungen.) R. Barany.

88. Erosions of the Stomach.—Berger gives the details of two cases of an affection of the stomach characterized by pains immediately after eating, weakness and emaciation, with hemorrhages into the stomach. No benefit was derived from the usual treatment for gastric ulcer, and autopsy confirmed the clinical diagnosis of erosions of the gastric mucosa. Nothing in the history or in the clinical and pathologic history suggested any other affection as causing, accompanying or following the erosions, and no eroded vessel could be discovered on the closest inspection of the stomach. This proves that surgical interference would have been useless. The only treatment that seems applicable in such cases, Berger says, is treatment as for ulcer, with bismuth. Benefit seemed to follow in the first case described, as the hemorrhage did not recur during the five days before the patient succumbed to pulmonary embolism.

97. Abdominal Arteriosclerosis.—Perutz describes in detail several cases of what he calls angina abdominalis, the sclerotic condition of the abdominal vessels causing at times violent painful spasms in the abdomen, sometimes merging directly into an attack of the latter. He ascribes the attack to spasmodic contraction of the vessels of the intestines, and the resulting local rise in blood pressure. The pains are probably located, he asserts, in the sympathetic and the mesenteric plexuses. Besides the anatomic changes in the vascular apparatus, functional disturbances, as from the influence of nicotin and other poisons, are liable to induce such spasms. Differentiation is frequently difficult and seldom possible until after prolonged observation. The diagnosis is aided by the prompt benefit generally derived from drugs which act on the vascular system. In one of his patients a gastric ulcer was first diagnosed, the predominant symptoms being tenderness in the epigastrium, pains in the stomach after eating, vomiting and backache. There was also considerable enlargement of the heart with a presystolic, systolic murmur at all the orifices. The pulse was fast but regular. A course of treatment for the assumed ulcer brought no improvement and the attacks of pain recurred, starting in the stomach region and radiating to the back, with dyspnea and anguish. The attacks were generally brought on by physical exertion and were accompanied by vomiting. Roentgenoscopy revealed an aneurism of the ascending aorta, and considerable improvement followed administration of remedies to act on the vessels and heart. Several patients had long been under treatment elsewhere for assumed gastric catarrh or nervous dyspepsia. In two cases a cancer in the stomach was surmised. After meals the stomach became distended and relief was sometimes obtained by eructations, at other times the dyspnea was extreme. The pulse was at time irregular after the attack, but nothing pathologic could be detected in the circulatory system and there was no occult blood in the feces. All kinds of dietetic and medicinal measures addressed to the stomach failed to afford relief. No benefit was derived from any measures until drugs useful in arteriosclerosis were tried, when improvement at once became manifest. The attacks recurred later at times, but were promptly dispelled by digitalis, nitroglycerin, etc. In two other cases there had been hematemesis before the patients came under treatment, and only the failure of measures addressed to the stomach differentiated the abdominal affection at last. In two cases on record the symptoms suggested intestinal occlusion and neither patient survived the laparotomy. Autopsy revealed in one case extensive sclerosis of the abdominal aorta and in the other old thrombosis of the superior mesenteric artery with partial compensation by collaterals. The cause of death in this case was a recent hemorrhage and infarct which had developed in consequence of the altered blood pressure during the operation. In another case on record, the apparently indicated laparotomy for a surmised chronic affection of the cecum was postponed on consideration of the abuse of tobacco, the existing myocarditis and the signs of arteriosclerosis elsewhere, and the prompt benefit from drugs acting on the blood vessels confirmed the diagnosis of arteriosclerosis of the intestinal vessels. One of Perutz's patients was a man of 47 whose stomach had been sensitive for years. Of late, on lying down after dinner the pulse became small, with anguish, dizziness and cold sweat. The stomach region was distended and so sensitive that the patient fainted when it was palpated, as also when the contents were aspirated. The condition improved somewhat under massage, etc., but a marked change for the better was noted as soon as digitalis and valerian were given. Extrasystoles were still occasionally observed, but they finally vanished after the patient visited the seashore. Cautious evacuation of the intestines and regulation of the diet, with massage, sometimes give excellent results, without the necessity for drugs, or at most, only potassium iodid. Perutz believes that vasomotor disturbances in the splanchnic region are a frequent accompaniment of the obstinate spastic atony of the intestines observed in young persons presenting general myasthenia. An abnormally irritable condition of the vessels and nerves, he states, is a frequent accompaniment of this condition, and urges that more attention be paid to the anatomic and functional circulatory disturbances accompanying sluggish bowel action and meteorism.

Archivio per le Scienze Mediche, Turin.

99 (XXXI, No. 1, pp. 1-98.) *Experimental Study of Osteomalacia and Rachitis. (Osteomalacia e rachitide.) B. Morpurgo.

100 *The Hypophysis (Pituitary Body) and Acromegaly. (Ipofisi e acromegalia.) G. Cagnetto.

101 Amino-Acids in Urine and Other Organic Fluids in Certain Pathologic Conditions. (Ricerca degli amino-acidi nelle liquidi organici.) F. Michell.

99. Experimental Study of Osteomalacia and Rachitis.—Morpurgo states that in 1899 an epidemic of osteomalacia developed among his laboratory animals, in a certain isolated group of white rats. None of the other animals was affected, although the conditions seemed to be identical for all. A coccus was isolated from the dead animals and inoculation of 193 other animals was followed by development of osteomalacia in 105, with dubious findings in 24. The others were not affected. The findings in the positive cases confirmed the assumption that the infection in question was able to induce osteomalacia and rachitic changes in the skeleton. The processes of the osteomalacia were identical with those of typical rachitis.

100. The Hypophysis and Acromegaly.—Cagnetto reports a case of a tumor as large as a hen's egg in the recess of the pituitary body. The patient was a man of 44 who committed suicide on account of intense headache and encroaching blindness. Cagnetto analyzes 4 other cases from his own and 3 from the experience of others. In 4 there was no sign of acromegaly, while in the other 4 it was present in a pronounced form. He is inclined to ascribe merely a passive rôle to the hypophysis in the genesis of acromegaly, which he thinks is probably a primary autointoxication, as this seems to be the only theory which does not conflict in some way with the anatomic findings.

Beiträge zur Klinik der Tuberkulose, Würzburg.

102 (VII, Nos. 1-4.) *Administration of Old Tuberculin by Inhalation and by Mouth. (Stomachale und inhalatorischer Darreichung von Alttuberkulin.) E. Huhs.
103 Etiology and Therapy of Pulmonary Tuberculosis. (Lungentuberkulose.) A. Dünges.
104 *Isolation of the Tuberculous and the Crusade Against Tuberculosis. (Isolierung d. Tuberkulösen u. d. Kampf gegen d. Tuberkulose.) L. Bourgeois and F. Blumenfeld.
105 *Demonstration of Antituberculin. (Nachweis v. Antituberkulin.) H. Lödke.
106 Physical Variations in Lung Apices. (Physikalisches Verhalten beider Lungenspitzen.) F. Senfferheld.
107 *Tuberculin in Pulmonary Tuberculosis. (Tuberkulinbehandlung d. Lungentuberkulose.) Hammer.
108 *Pulmonary Phthisis and Induced Abortion. (Phthisis pulmonum u. Abortus provocatus.) P. J. de B. P. van Amstel.
109 *Curability of Tuberculosis and Tuberculin in Children. (Heilbarkeit d. Tuberkulose u. Tuberkulin im Kindesalter.) Engel.
110 Familial Tuberculosis and Its Relation to Infection and Hereditary Transmission. (Familiäre Belastung d. Tuberkulose). W. Weinberg.
111 Method of Obtaining Cow's Milk Free from Bacillus Tuberculosis and Other Bacteria. (Gewinnung einer lebenden Tuberkelbazillen u. anderen Keimen freien unveränderten Kuhmilch.) Waele, Sugg and Vandeveide.
112 Id. H. Much and P. H. Römer.
113 Tuberculosis of Middle and Internal Ear. (Tuberkulose d. mittleren u. inneren Ohres.) H. Herzog.
114 *Relations of Bony Thorax to Lungs and Their Significance to Recovery from Pulmonary Phthisis. (Beziehungen d. knöcheren Thorax z. d. Lungen u. ihre Bedeutung d. Genese d. tuberkulösen Lungenphthise.) C. Hart.
115 Bronchophony of Whispering Voice. (Flüsterstimme.) E. Masing.

102. Old Tuberculin by Mouth and by Inhalation.—Huhs studied the effects of the administration of old tuberculin by mouth in thirteen cases, and by inhalation in two cases, and found that in the former, even when large doses of tuberculin were administered, no reaction, either local or general, occurred. In the latter, in which the tuberculin was administered by inhalation, a typical general and local reaction occurred, but the results were by no means so reliable as in cases in which tuberculin is administered by injection. Huhs is of the opinion, therefore, that these two methods of administering tuberculin are of no value from the standpoint of therapeutics.

104. Crusade Against Tuberculosis.—Bourgeois and Blumenfeld discuss the treatment of tuberculosis in its various stages, in the dispensary, in the hospital and in the sanatorium. The paper is the report of Bourgeois as a member of the council of surveillance of the *Assistance Publique* of Paris.

105. Antituberculin.—As the result of experiments on animals and observation of clinical cases, Lödke believes that antituberculin is formed in the tissues, and is taken up by the blood. The results of his findings are set forth in detail in eight tables, and the report of twenty clinical cases.

107. Tuberculin in Pulmonary Tuberculosis.—Hammer reports 50 cases in which tuberculin was used. These cases represent all stages of the disease and the results obtained lead the author to say without equivocation that tuberculin may be used in the treatment of all cases of pulmonary tuberculosis, even the most severe.

108. Pulmonary Phthisis and Abortion.—Van Amadel says that the pregnancy influences unfavorably an existing pulmonary phthisis; that the offspring of a tuberculous mother possess diminished resistance and a hereditary predisposition to tuberculous processes, and especially pulmonary phthisis; that in such persons pregnancy often is the exciting cause for the development of tuberculous processes. He urges that it is the physician's duty to warn women suffering from pulmonary phthisis against entering wedlock; to point out the necessity and the benefits of a facultative sterility, and in the event of pregnancy, to advise its interruption. The earlier the stage of the disease, the more urgent is the indication for the interruption of the pregnancy, although this procedure is always indicated so far as the interests of the mother are concerned. Furthermore, the fact that the offspring will possess little resistance against tuberculosis and that it will be ill fitted to thrive and endure also is taken as an indication for the justifiable production of abortion in such cases.

109. Tuberculosis in Children.—Engel claims that it is possible to cure children who have tuberculosis, provided the disease is limited to the lymph glands.

114. Abnormalities of Thorax.—Hart attempts to show that any abnormality of the bony wall of the thorax predisposes to pulmonary tuberculosis, and urges as a prophylactic measure, such exercises as will enlarge the thorax and thus increase the excursions of the lung during respiration.

Centralblatt f. d. Grenzgebiete d. Med. u. Chir., Jena.

116 (X, 1-10.) Scariatina Puerperalis. R. Pollak.
117 Roentgen Treatment of Malignant Tumors. K. H. Schirmer.
118 Neuropathic Affections of Bones. (Neuropathischen Knochenaffektionen.) F. Tedesko.
119 Status of Spinal Anesthesia. (Rückenmarksanästhesie.) B. Venus.

Books Received

HYGIENIC LABORATORY BULLETIN No. 36. Studies on Hypersusceptibility and Immunity. By M. J. Rosenau and John F. Anderson. Paper. Pp. 69. Washington: Government Printing Office. 1907.

ARBEITEN AUS DEM PHARMAZEUTISCHEN INSTITUT der Universität, Berlin. Herausgegeben von Dr. H. Thoms, Professor und Direktor des Pharmazeutischen Institutes der Universität, Berlin. Cloth. Pp. 340. Berlin: Urban & Schwarzenberg, 1907.

TRANSACTIONS OF THE AMERICAN PEDIATRIC SOCIETY, Eighteenth Session. Held May 30-June 1, 1906. Edited by L. E. LaFétra, M.D. Vol. XVIII. Reprinted from Archives of Pediatrics, 1906-1907. Cloth. Pp. 307. New York: E. B. Treat & Co., 1907.

THIRTIETH ANNUAL REPORT of the Board of Health of the State of New Jersey, 1906, and Annual Report of the Bureau of Vital Statistics. Cloth. Pp. 458. Trenton, N. J.: John L. Murphy Pub. Co., 1907.

PHYSIOLOGY OF ALIMENTATION. By Dr. Martin H. Fischer, Professor of Pathology in the Oakland College of Medicine. First Edition. Cloth. Price, $2.00 net. Pp. 348. New York: John Wiley & Sons. London: Chapman & Hall, 1907.

HACKLEY HOSPITAL, Muskegon, Michigan. Established May 28, 1902. Dedicated and Opened Nov. 17, 1904. Report from Nov. 17, 1904, to April 30, 1907. Paper. Pp. 52.

MONTHLY SUMMARY OF COMMERCE AND LABOR OF THE UNITED STATES. No. 12, June, 1907. Paper. Pp. 230. Washington: Government Printing Office.

NEW PATENTS.

Recent patents of interest to physicians:

861159. Surgical needle. William R. Burch, Chicago.
861231. Surgical ligature. Arthur W. Clark, Conshohocken, Pa.
861019. Therapeutic lamp. Harley E. Coger, Minneapolis.
860908. Stethoscope. Fredrick Dittmar, Philadelphia.
860952. Suspensory. Henry A. Frye, New York.
860862. Fumigator. Menzo R. Fuller, Greenville, Texas.
860859. Soda-fountain syrup pump. F. H. Hocker, Los Angeles, Cal.
860869. Abdominal massage apparatus. J. C. Johansen, Copenhagen, Denmark.
861571. Disinfecting or antiseptic composition and making the same. Henry S. Blackmore, Mount Vernon, N. Y.
861287. Hernial truss. John W. Bunker, New York.
861272. Operating table. James H. Downey, Gainesville, Ga.
861856. Corn and callous shaver. George Haveli, Newark, N. J.
861851. Electrical heater for hot water bags. C. V. Hill, St. Louis.
861862. Artificial hand. Jacob Hinz, Jr., White Lake, S. D.
861855. Ligature container. B. K. Hollister, Chicago.
861380. Stopper for water bags and the like. John Nuttall, Bridgeport, Conn.
861610. Massage apparatus. Richard S. Sarver, Kansas City, Mo.
861915. Eye-testing instrument. Peter O. Stornes, Johnstown, Pa.
862375. Poison bottle. James Sanford, Brooklyn.
862794. Facial bandage. Agnes L. Black, Sacramento, Cal.
862304. Disinfecting apparatus. W. J. Bowerman, Detroit.
862385. Thermometer steriliser and holder. G. M. Brubaker, Mercersburg, Pa.
862712. Medical instrument. J. S. Collins, Carlinville, Ill.
862619. Surgeon's needle holder. Charles Driest, New York.
862455. Crutch. Mark J. Dunbar, New Bloomfield, Pa.
862737. Atomizer. H. A. Hill and J. A. Lindstrom, Northampton, Pa.
862837. Truss. Thomas E. Martin, Buffalo, N. Y.
862190. Surgical foot-rest. James H. O'Reilly, Louisville, Ky.
862193. Truss. Emery H. Parker, Chicago.
862507. Rectal-injection apparatus. Charles H. Quimby, New York.
862763. Medicated bougie. Ludwig Sensburg, Munich, Germany.
862771. Medicine case. Robert L. Taylor, Memphis, Tenn.
862856. Vibrative liquid atomizer and mixer. James W. Tygard, New York.
862857. Santalol carbonate. Hermann Vieth, Ludwigshafen-on-the-Rhine, Germany.
862858. Insipid sandalwood-oil preparations. Hermann Vieth, Ludwigshafen-on-the-Rhine, Germany.
862781. Electrotherapeutic apparatus. Leonidas G. Woolley, Lima, Ohio.
863143. Massage apparatus. Sylvanus F. Bowser, Fort Wayne, Ind.
863144. Flexible massage device. Sylvanus F. Bowser, Fort Wayne, Ind.
862976. Obtaining ammonia, etc. Heinrich Koppers, Essen-on-the-Ruhr, Germany.
863417. Process to utilize the infestor calamus. Francisco S. Moyano, Aguilas, Spain.
863127. Soda-water bottling machine. William C. Wood, Baltimore.